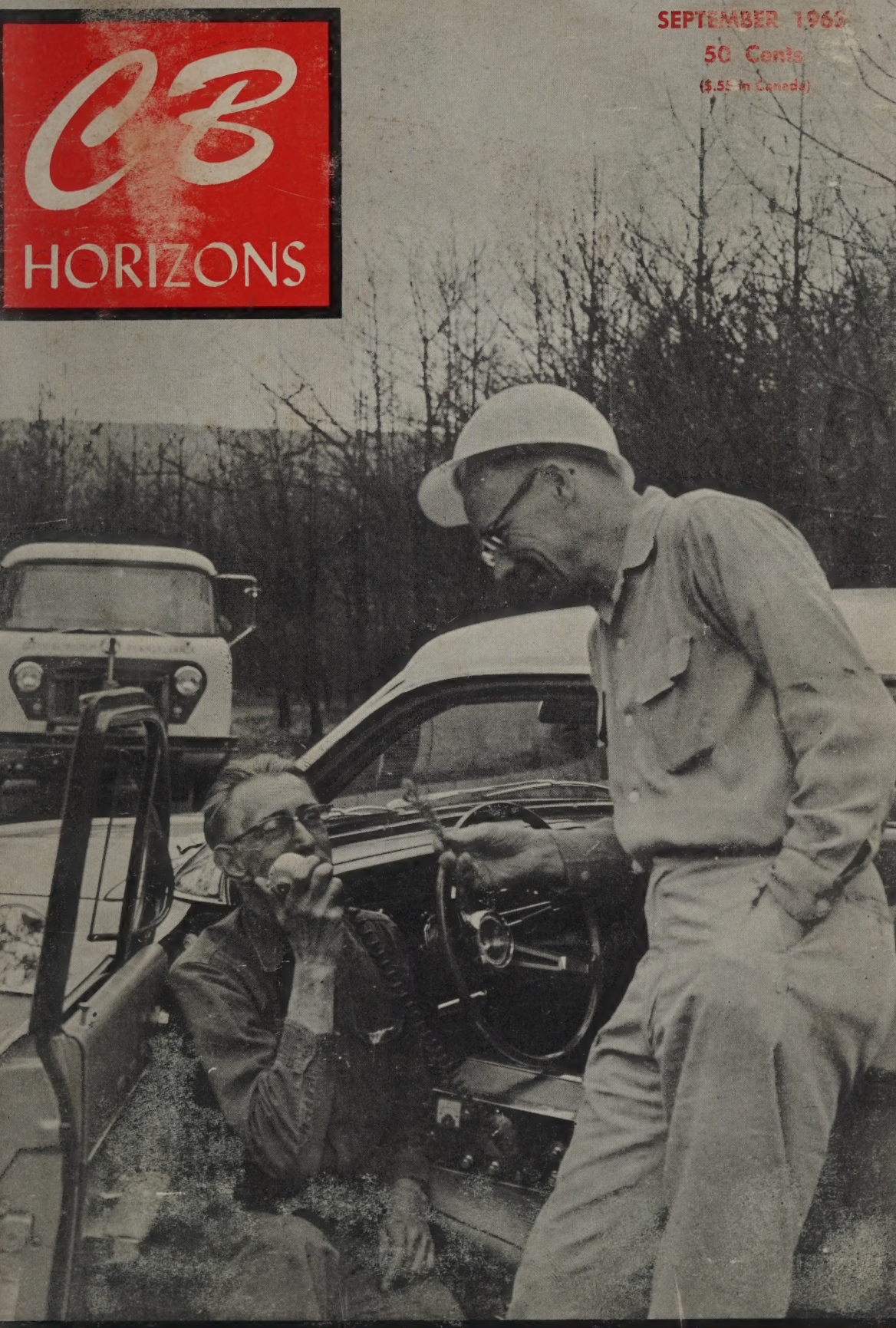
SEPTEMBER 1963
50 Cents
($.55 in Canada)

CB HORIZONS



TWO-WAY RADIO FOR BUSINESS AND PLEASURE

General MC5 Sidebander

the measure of quality for all citizens band transceivers

The World's most advanced 11 Meter two-way radio

FREE— Write for schematic and complete technical manual

3.25 watts minimum output. • Sideband receiver adapter* for single and double sideband reception. • New Zener Diode shunt noise-clamp and series gated limiter circuit for highest noise limiting ever achieved. • New ultra-low drift oscillators for unsurpassed stability. • New, Hi-Level Tone-Signal. • Illuminated "S" Meter. • 6V, 12V, 115V operation. • 15 watt construction. • Net Price including microphone and crystal . . . $199.95. • *Sideband receiver adapter optional $19.95 + inst. Optional accessories available. 6 Volt or 12 Volt cord, each $4.95. Crystal T or R, each $2.95. 90 day warranty. F.O.B. Burbank, California.

Under present rules part 19.32 the FCC does not provide for more than (5) watt input in the Citizens Radio Service (26.965-27.225 MC Band)

General's SIDEBAND TRANSMITTER — Available Soon

A new concept in C.B. Communications. A Sideband Transmission Adapter and AM Linear Amplifier **all in one package**. . . and best of all **True Electronic Switching**—Just plug it into the antenna. This unit may also be used on the 10 meter band at 50 Watts P.E.P. Sideband and 25 Watts P.E.P. AM with only 3 watts of drive.

This Dual Function. . . Sideband and AM Linear Amplifier for 10 and 11 meters is only $99.95 Net. F.O.B. Burbank, California.

GENERAL RADIOTELEPHONE COMPANY

3501 West Burbank Boulevard, Burbank, California

Announcing.....The rugged

General VS2

GENERAL RADIOTELEPHONE COMPANY
A B C D E
REGISTRY NO.
DESIGNED TO COMPLY WITH REQUIREMENTS FOR CLASS "D" EQUIPMENT AS SET FORTH UNDER FEDERAL COMMUNICATIONS COMMISSION RULES.
MODEL VS-2, TRANSCEIVER, VIBRATION SERVICE RATED. FREQ. RANGE: 26-27 MC. POWER REQUIREMENTS: 12-14 VOLTS DC. - 115 VOLTS AC. MANUFACTURED IN U. S. A.
SQUELCH
ON · OFF · VOL

First vibration resistant, two-way radio.

General Radiotelephone, already known and respected as quality leaders in the communications field, again prove themselves "years ahead in craftsmanship" in bringing you this compact two-way radio unit which has proven itself sturdy enough for outdoor use on all types of industrial and agricultural vehicles.

VS 2 offers these special features at **no** extra cost:

1. Transistorized power with automatic short circuit protection.
2. Electronic switching—eliminates relay problems.
3. Microphone with coil cord and moisture proof cartridge.
4. Triple plated chassis—Copper, Cadmium and Gold Iridite.
5. Rugged black Vinyl cabinet finish.
6. Etched aluminum panel.
7. Designed especially for rough and tough service operation.

Net price including microphone, crystals for one channel and 115 volt power cord...only $139.95.

General's VS 2, because of its **Vibration Rated Service,** will meet every outdoor requirement and can be used with utmost confidence on jeeps, tractors, fork lifts or on any type equipment needing rugged dependability.

WINNER OF GENERAL'S DRAWING
GEORGE E. HULSE, KFJ0644
ALDERWOOD MANOR,
WASHINGTON

GENERAL RADIOTELEPHONE COMPANY

3501 West Burbank Boulevard, Burbank, California

OZZIE'S MAIL BOX

Dear Ozzie—

I have followed with keen interest your treatment of the Part 19 matter (FCC proposal to change our rules and regulations), and the coverage afforded this end of CB by the other magazines, such as Popular Electronics, 10-4 and S-9. Frankly, I have not always liked what I have read about this matter in CB Horizons. But at least your publication and editor have the gumption to stand on your own two feet and report the situation as you see it. I have had it "up-to-here" with these other so-called CB magazines that make sick excuses for CB, refuse to admit that we Hobby users exist, and suggest in print that an FCC concept fostered in 1958 still fits a situation that they themselves (the FCC) admit they did not envision in the beginning of CB. We Hobby users do exist. Right or wrong, we're here, and as you pointed out in your June issue, we form the backbone of the emergency communications, search and rescue and radio assistance leagues. I for one would hate to hear the howls of protest from the hundreds of large and small towns around the country which have learned to depend upon and respect this type of communications readiness if Hobby users are cut-off-at the pass. As I stated earlier, I have not always liked what I have read in CB Horizons. But not because I disagree with what you say. Only because you have dared to speak out the truth about the situation as it exists today. And the truth sometimes hurts. My hat is off to you for a fine continuing job of first class journalism. If it weren't for CB Horizons and your editor Cooper, I for one feel that the FCC would have squeaked that Part 19 proposals in Docket 14843 into effect before the unsuspecting CB public knew what happened. Certainly the other magazines would never have protected us! They may continue to attack you in print, but only in blind ignorance. In me, you have a reader for life.

Harold J. Weimer, KHI4104
Milwaukee 16, Wisconsin

Harold:

Under normal circumstances we wouldn't have printed your letter in its entirety. However you have put into words something we have been trying to get across for months, and so forcefully, that we couldn't resist. And that is this: United we stand, divided we fall. Those who hollar loudest for non-support of the Hobby users are either purposefully 'agin' us, or simply ignorant of the very vital role Hobby users play in today's 1963 world of CB.

Ozzie

Dear Ozzie—

I would like to take advantage of your lifetime renewal subscription offer to CB Horizons, but I think you guys are dreamers. If our politicians don't get their greasy, fat, chubby little fingers out of the $$ CB pot, we may not have it another year. I hereby submit my application to operate smoke signals on the 27 millimeter heat wave band.

P. E. Hines
Box 383
Calexico, California

P. E.:

We assume your initials don't stand for physical education. On the off chance that they do, we'll hope that you are in good health and more than conditioned for an hour or two session with your local congressional representative, down at Maxey's gym. When he sees your comments, he'll probably shoot you off an R.S.V.P. by return smoke signals, using his franking privilege.

Ozzie

Dear Ozzie—

Reference Volume III, Number 2, for February, 1963, CB Horizons. We read your article "What Our Readers Are Saying About Part 19", page 42, where you comment about the purported connection between CB and civilian defense. We are at a complete loss as to how Class D Citizens Radio is connected or in any way affecting the Civil Defense program. The Director of Civil Defense in the state of Indiana has issued the ruling that the Federal Communications Commission has assigned only two frequencies in the radio spectrum for Civil Defense use and neither of these are in any of the bands of frequencies allotted to the Citizens Radio Service. Thus equipment for Citizens Radio Service is not useable in CD work. Police Chief Harold Swick, Lafayette, Indiana, who is Director of Civil Defense in Tippecanoe County, State of Indiana, has stated that the Citizens Radio Service is illegal to use for CD work. From what your readers have said, it must be in use elsewhere however.

Richard Hoadley
Commercial Radiotelephone
Operator P2-18-8301

Dick:

In all dues respect, the Police Chief and Tippecanoe County CD are missing the best possible radio communications bet in the county by not utilizing CB for Civil Defense back-up or liason. As you noted, you have but two frequencies for official CD work allotted by the FCC. That's two conversations you can carry on at a time. Dozens of counties and towns have decided they don't want to tie up these two channels with all of the secondary message traffic that goes with most CD exercises, and have wisely chosen CB volunteers to handle this kind of traffic for them. As for the FCC interpretation of CB's place in CD, we suggest you read very carefuly paragraph 19 in Docket 14843, now before the Commission.

Ozzie

Ozzie—

In a recent CB Horizons, your mail-box column mentioned the Makino circuit for noise limiting. I have two GW-10 units, and am most interested in seeing this circuit. From what your readers have said, it must be quite something!

V. G. Sexton, KBG7132
Westwood, N.J.

V. G.:

Try this issue of CBH, 'Makino Re-Visited,' starting on page 22.

BIG in performance . . . BIG in value . . . and only Electronic Wholesalers has this BIG news in CB

BRAND NEW "BIG E"

- dual conversion super heterodyne receiver
- dual series gated noise limiter
- positive squelch action
- sensitivity of .5 microvolt over entire band
- crystal controlled 11 position transmit plus 1 external position
- press-to-talk ceramic mike with coil cord and plug
- positive receiver tuning by use of spot switch
- built-in "S" meter and modulation indicator
- POWER SUPPLY: 6VDC, 12VDC, 110 VAC

CITIZEN'S BAND TRANSCEIVER

SENSATIONALLY PRICED AT **$119.95**

ELECTRONIC WHOLESALERS, INC. J.F.
GENERAL OFFICES:
2345 SHERMAN AVE., N.W. WASHINGTON 1, D.C.

☐ Send me Free Flyer on complete "BIG E" specs.

☐ $_____enclosed for "BIG E"
_____, shipping charges collect.

Name _____

Address _____

City _____ Zone _____ State _____

We also have all accessories for the "Big E" and all of your CB needs including all major brands

ELECTRONIC WHOLESALERS, INC.

"BIG E" on sale at these E.W. Divisions

WASHINGTON, D.C.
2345 Sherman Ave., N.W.
Phone 483-5200

WINSTON-SALEM, N.C.
938 Burke Street
Phone 725-8711

HUNTSVILLE, ALABAMA
2310 Bob Wallace Ave., S.W.
Phone 534-2461

MELBOURNE, FLORIDA
1301 Hibiscus Boulevard
Phone 723-1441

MIAMI, FLORIDA
9390 N.W. 27th Avenue
Phone 696-1620

E. W. Divisions also in: Baltimore, Maryland • Atlanta, Georgia • Cocoa Beach, Florida • Hollywood, Florida • Orlando, Florida • St. Petersburg, Florida • West Palm Beach, Florida.

"SERVING THE ENTIRE SOUTHEASTERN U.S."

CB HORIZONS

SEPTEMBER 1963

VOLUME 3 • NUMBER 9

PUBLISHED MONTHLY, ON BEHALF OF THE CITIZENS BAND RADIO USERS OF THE UNITED STATES AND THE WESTERN HEMISPHERE, BY HORIZONS PUBLICATIONS, INC., OKLAHOMA CITY 1, OKLAHOMA

STAFF

Bob Cooper, Jr., KEG2607
Editor-Publisher

Russ L. Miller
Resident Engineer

Bob Buckland, XM44168
Canadian Editor

Pedro Seidemann, YV5-PS279
South American Editor

Gar Green, Jr., 1W4844
Editor-at-Large

Jamie Jones, KEG3290
CCM Project Coordinator

Stan Searle, KEG4537
Advertising Manager

Marvin Lawrence
Advertising Assistant

Charles Morton
Graphic Arts Director

Diane Mashore
Production Coordinator

Deborah Carter
Circulation Manager

Jean Schaefer, KEG4829
Art Director

Ronald Fortner
Univac Data Engineer

OFFICES

1025 N. Broadway
Oklahoma City 2, Oklahoma
Tel: CE 2-1108
Area Code 405

Subscription rate in the United States $5.00 per year. Single copy price $.50. Subscription rate outside the United States, $6.00 per year. Single copy price outside the United States $.55. Subscription remittances should be made on bank draft or with postal money order. CB HORIZONS (title registered United States Post Office) entered as third class postage material in Oklahoma City, Oklahoma. All copyright and editorial rights reserved by Horizons Publications, Inc., 1963.

- CONTENTS -

TECHNICAL—

Sideband Basics for the CB'er 14
Makino Noise Limiter Re-Visited 22
Fighting Alternator Noise 25
Proposal for 46 CB Channels 27
Makino S-Meter Conversion 36
Report on ESCI Courier 1M 44

NEW CB'ER MATERIAL—

Nine Rules for Dealing With FCC Inspectors 29
Free Transceiver — Gigantic Give Away 13
New Products on the Market 46

OPERATING NEWS—

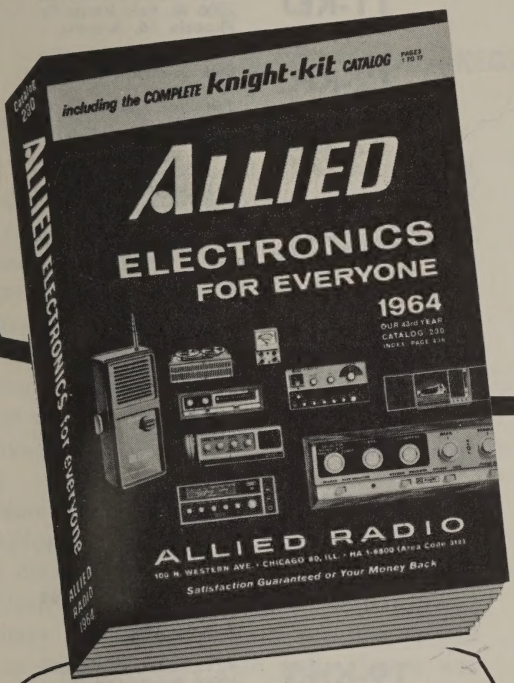
A.C.B.A. National Convention Report 32
CB DXing Listening Reports 38
CB News from Coast-to-Coast 52

Ozzie 4
CCM Directory 8
CB Calendar 8
Channel 24 9
Free Transceiver 13
Strays 21, 28, 42
CB Tech Tips 36
CB Listener 38
Lab Reports 44
CB Showcase 46
CCM Reports 52
Classifieds 57

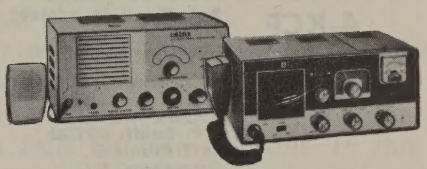
save most on everything in CB

send today for your

FREE ALLIED 1964 CATALOG



444 PAGES • WORLD'S LARGEST ELECTRONICS CATALOG

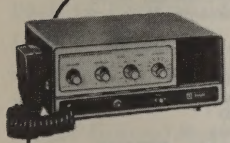


BIGGEST SELECTION • BIGGEST SAVINGS

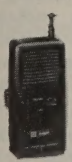
See the *newest* and *money-saving best* in CB in your 1964 ALLIED Catalog. Send for it today! Largest selection of Walkie-Talkie, portable, and fixed-station equipment; everything in CB antennas and accessories—including exclusive products and values available only from ALLIED. For everything in CB—for *everything* in Electronics, get the 444-page ALLIED 1964 Catalog!

FREE

SEND COUPON TODAY



SAVE MOST—
Build-Your-Own CB *knight-kits*®



See the top-value CB KNIGHT-KITS! There's nothing comparable to the new low-cost C-555 walkie-talkie, the C-22 deluxe base/mobile CB transceiver, the KG-4000A full 1-watt walkie-talkie, and the popular C-100 Transceiver at only $9.95. Here's quality, dependable CB radio you'll enjoy building and operating—and you'll appreciate the big savings. Fully described in your 1964 ALLIED Catalog—send for it today!

NO MONEY DOWN! Get Top Buying Power with Your Allied Credit Fund Plan.

ALLIED RADIO
America's CB Center

ALLIED RADIO, Dept. 22-J
100 N. Western Ave., Chicago 80, Ill.

☐ Send FREE 1964 ALLIED 444-Page Catalog

Name_____
PLEASE PRINT

Address_____

City_____ Zone____ State_____

CITIZENS COMMUNICATION MANAGERS

CCM's are volunteer reporters appointed by CB Horizons to report operating news and coming events of their locales. CB'ers interested in participating in this program are urged to contact our CCM Project Coordinator, Jamie Jones.

1-KBF
K. F. Knight, KBA5750
14 Shadbush Rd.
Warwick, R.I.
George Petitto, Jr., 1Q1657
Box 7
E. Woodstock, Conn.
Ed Millett, Jr., KBC0238
52 Fern Street
Bangor, Maine
Harry Tower, KBA1700
18 Whittier Rd.
Medford, Mass.
Carolyn Guilmain, KBC0268
9 Palmer Rd.
Framingham, Mass.

2-KBG
Helen Lombardi, KBI1714
Peter Lombardi, KBI1040
9949 First Street
Hamilton Beach 14, N.Y.
Mike Troy, KBI2504
271 N. Ridge St.
Port Chester, N.Y.
Frank Ohrnberger, KBG4454
75 Queen Anne Rd.
Bogota, N.J.

3-KCC
Ronald Sellers, KCC3373
835 S. Albemarle Street
York, Pennsylvania

4-KCF
R. L. Rhinehart, KCF1492
314 Liberty Street
Hagerstown, Maryland

5-KCI
W. C. Hatcher, KCI0348
713 Parrott Avenue
Kinston, N.C.
J. P. Setliff, 5Q2388
2512 Atlanta St.
Greensboro, N.C.

6-KDB
T. D. Craven, 6Q3969
Box 32
Royston, Ga.
Tommy Mellons, KDB0235
1122 Windsor St.
Kingsport, Tenn.

7-KDH
Hugh Pinney, 7Q0523
376 N. Atlantic Ave.
Cocoa Beach, Fla.

8-KEA
Bill Campbell, KEB0267
622 Division St.
Metairie, La.

9-KED
John Hudson, 9Q0026
235 Englewood Drive
San Antonio, Texas

10-KEG
Irvin Hemmle, 10W4336
2200 W. Rosedale S.
Ft. Worth, Texas

11-KEJ
R. V. Watson, 11Q1125
2206 W. Palo Verde Dr.
Phoenix 15, Arizona

12-KFC
Dick Southern, 12Q3113
90 Hobson
San Jose, California

14-KFI
Fern Fechner, 4Q1295
118½ Parhill St.
Cashmere, Washington
R. L. McChesney, 14Q1113
Saco, Montana

15-KGB
A. V. Carlson, KGB1625
2257 Eliot Street
Denver 11, Colorado
E. L. Walker
P.O. Box 250
Espanola, N.M.

16-KGE
V. Tareski, 6W1728
1372-12th Ave. N.
Fargo, N.D.

17-KGH
J. Leversee, 17W3361
Box 53
Janesville, Iowa

18-KHA
R. E. Combs, 18B1711
212 Bolivar St.
Owensboro, Ky.
R. D. Cooper, 18A7297
930 Monroe Street
Elkhart, Indiana
D. C. Wolcott, 18A4803
RFD. 1
Cedar Rapids, Iowa

19-KHG
V. L. Cuker, 19W9224
45996 Brentwood Drive
Mt. Clements, Michigan

20-KIC
L. C. Adams, KID1014
64 Earl St.
Rochester, N.Y.
Jack Marshall, 20W8023
Box 260
Canastota, N.Y.
Dick Vernon, 20Q1468
Box 284
Butler, Pennsylvania

CB MEETING CALENDAR

Throughout the spring, summer and fall months, many CB clubs and search and rescue organizations stage one, two or three day jamborees, picnics of social-technical events. Such events are listed here as a service of CB Horizons.

LEBANON, OHIO—South Western Ohio Citizens Band Association, Box 231, Mason, Ohio holding their first 'Nationwide Jamboree' August 25th. Exhibits of equipment, entertainment, refreshments, prizes. Attendance of 3,000 expected with proceeds going to charity. For further information, contact Basil Petty, KHG3966 at the club address above.

QUINCY, ILLINOIS—Quincy Area Citizens Band Club holding CB Jamboree **August 25th.** Jamboree starts at 7 AM and ends when the last CB'er leaves. Prizes, including a CB transceiver, antenna, other equipment. Food and fun for all ages. Channels 9 and 12 to be utilized for local road directions. Contact W. O. Hart, 18W 7182, 1223½ Broadway, Quincy, Illinois for further information.

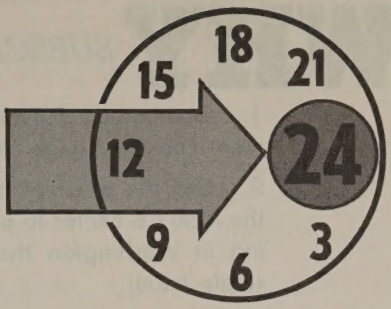
DALTON, GEORGIA—North Georgia CB Club planning a CB Jamboree **August 31** and Sunday **September 1.** Acres of parking and camping space. Orchestra for dancing, skating, swimming, fishing and other recreation. Prizes. Signs directing mobiles plus stand-by direction service on channels 11 and 21. A. T. Cline, Engineer for the FCC in Atlanta has been invited as the featured guest speaker. Contact W. F. Nolan, North Spencer Street, Dalton, Georgia for full details.

SEATTLE, WASHINGTON—Washington State Citizens Band Association, an association of Washington state CB clubs comprising approximately 1,500 members, planning a 3 day CB jamboree in the Seattle area for **August 31, September 1 and 2.** Contact Ken Gustafson, P.O. Box 3205, Everett, Washington for details and information.

PITTSBURGH, PENNSYLVANIA—Five-Eleven Radio Club Inc., planning their 11 Meter Picnic for **September 8.** Location the same as last year, White Swan Park on Route 22-30. Contact Donald A. Drake, 1521 Creedmore Avenue, Pittsburgh 26, Pa.

EDITORIAL

CHANNEL



BOB COOPER, JR.—KEG2607

WHAT PRICE LIBERTY?

At the out and out risk of sounding like a patriot (in a day and age where few of us remain) I would like to discuss the present state of the Class D art.

Our radio service was established as a short-cut to communications. No tests. No box tops. And until recently, no money for licenses. What we got for our 'no-effort' license was worth a great deal to each of us individually. But others don't see it that way.

Now we find ourselves in a pickle. Our no-effort radio license is threatened by federal decree, promulgated by a single federal official, and it appears that if **he** is allowed to have his way, our no-effort license will be as worthless as a ham radio license was back in the period 1941-45 (when the FCC took all hams off the air pending the outcome of those overseas nasties). In other words, it has been proposed that our no-effort license receive its dues: **no privileges.**

Those radio services which aren't genuinely friendly towards CB continue to harp at the **fact** that in as much as we haven't work for, paid for or proven our ability to operate a radio station licensed by the federal government, we shouldn't receive any privileges either.

This is a strange paradox in a country which pays hard cash money to farmers who **don't** grow wheat, pays hard cash money to people who **won't** or can't work for a living and pays hard cash money to nearly 100 overseas nations which **can't** support themselves.

While we are handing out billions upon billions to people who **won't, can't or don't,** we get into a nationwide harrangue over a relative handful of citizens who **want to** (operate two-way radio stations), but whom the government says shouldn't because **merely having the desire** isn't good enough. Apparently we have to have the smarts to get an amateur license or the money to buy a business radio service station to qualify, under this year's reasoning!

This illustrates, I believe, the price we have paid for a "quick and easy license." The government, and other radio users are aware that the no-effort licenses are the most popular thing to come down the pike since television. So now they want to make things tougher, to make us realize what a valuable service we have.

If this is their reasoning, and I sincerely believe it is, I for one would welcome a proposal which woud make our licensing just a little bit more difficult. IF this is what it takes to gain us some respect and win for us some confidence at the Commission.

For example, and this is strictly an example, if on form 505 (or any of its successors) they wanted to use one side to ask us 10 questions about general radio procedure, in the form of a test through which we could indicate that we **do** know which side of the microphone to talk into, I'd second it with enthusiasm.

I would — IF I had the assurance that by taking such an 'exam,' and by passing it, that I would gain the respect of the Commission and other radio service users as a licensed operator.

For as long as we have this no-effort license on which to hang our shingle, I'm afraid that we will be stuck with a radio service that is bound to be labeled as a toy or plaything. Regardless of how many lives we save, people we find or cattle we move. By radio.

CONTINUED — Page 43

WHY *SUBSCRIBE TO CB HORIZONS?*

1. Guaranteed delivery every month, with the annual $1.00 Equipment Directory issue (August issue) available at no extra cost.

2. End the constant battle to beat dozens of other local CB'ers to the local CB center to pick-up the latest issue. With so much happening in Washington these days, you can't afford to be without a single issue!

3. You can now obtain a **Charter Membership in the ACBA** at no extra cost, simply by subscribing to CB Horizons. This gives you the protection of the national organization as well as the very latest news and features from all over CB land.

4. How are you going to win that free transceiver in the Give-Away if you don't have a magazine every month?

WHY *JOIN THE ACBA?*

1. The American Citizens Band Association is the only democratic nation-wide CB organization built upon the foundation of representing all CB'ers, everywhere, before the nation, the government and the world.

2. The ACBA needs your support today. Dozens of CB clubs from California to Massachusetts have already joined on behalf of their membership. Thousands of individual CB'ers have joined. As soon as the ACBA has 10,000 Charter Members, nationwide elections will be held and a Board of Directors will meet to formally adopt the governing policies of the organization. **ANY CHARTER MEMBER CAN BE NOMINATED FOR A POSITION ON THE BOARD.**

3. Read the complete ACBA Platform, appearing in the July, 1963 issue of CB Horizons.

WHY *BUY CB REFERENCE BOOKS?*

1. **The Call-Book Series** — 1960 W series book; 1960 W-A-B series book. 1962 Q series book; 1963 K series book. 1963-Summer K series book. More than 400,000 CB'ers in all listed, with call letters, name and address. See card A on reverse side of insert to right.

2. **The CB Log-Book** — The most popular CB manual ever published by Horizons. Offered by the ACBA, with proceeds from its sale donated to the ACBA by Horizons. Entry lines for 1,400 contacts, stations heard or business transactions over the radio. 5 year call-area map, 10-code, RSFM signal reporting system and a four page guide to CB DXing awards. Just $1.50 per copy. **See Card on reverse side of insert card to right.**

3. **The CB Mobile Handbook** — 140 pages packed with everything there is to know about installing, maintaining and operating a CB mobile. Handy glove compartment size. Originally sold to thousands for $2.95. Close out on the 1962-63 edition, while they last . . . $1.95 each. **See Card B on reverse side of insert card to right.**

NOW - SUBSCRIBE TO CBH HERE

YES — Sign me up for 12 months of CB Horizons ($5.00) and donate $1.00 of this to the ACBA for my membership. Don't forget to send along my ACBA membership card and packet!

Name ..... CB Call .....

Address .....

City ..... Zone ..... State .....

AIRMAIL TODAY TO:
CB Horizons
P.O. Box 1557
Oklahoma City 1, Oklahoma

ALREADY A CBH SUBSCRIBER? JOIN ACBA HERE!

OK ACBA —
Put me down as a charter member and send me the full membership package.
$1.00 enclosed.
Name ..... CB Call .....

Address .....

City ..... Zone ..... State .....

AIRMAIL TODAY TO:
American Citizens Band Association
P.O. Box 405
Oklahoma City 1, Oklahoma

Place
4 Cent
Stamp
Here

CB HORIZONS SEPTEMBER GIVE-AWAY

P.O. BOX 1557

OKLAHOMA CITY 1, OKLAHOMA

ORDER CB CALL-BOOKS HERE

Check off the issues you are enclosing payment for:

1960 W. Calls ($3.95) _____ 1963 K Series Calls ($4.50)

_____1961 W-A-B Calls ($3.95) _____ Summer 1963 K Series Calls ($3.95)

Name _____ CB Call _____

Address _____

City _____ Zone _____ State _____

Total Amount Enclosed $_____.

Mail to: CB Call Books, P.O. Box 1557, Oklahoma City 1, Oklahoma.

ORDER CB LOG BOOK – CB MOBILE HANDBOOK HERE

Check off the Manuals you are enclosing payment for:

CB Log Book and Operating Manual ($1.50 postpaid)

CB Radio Mobile Handbook ($1.95 postpaid)

Name _____ CB Call _____

Address _____

City _____ Zone _____ State _____

AIRMAIL ORDER TO:

CB Manuals
P.O. Box 1557
Oklahoma City 1, Oklahoma

SEPTEMBER CB HORIZONS GIVE-AWAY CARD

Toss my card into the hopper for that ECI Courier 1M transceiver!

Name _____ CB Call _____

Address _____

City _____ Zone _____ State _____

The **complete name and address** of the local CB club is: _____

_____

_____

The CB store I shop at is (name and complete address): _____

_____

_____

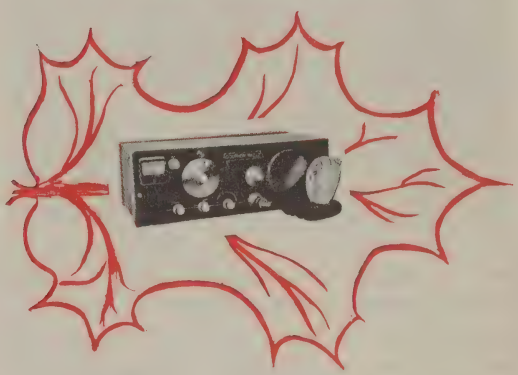
The CB magazines I read **monthly** are (check)

_____10-4 _____Popular Electronics _____S-9 _____Other.

1963 SEPTEMBER 1963						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

THIS MONTH'S FREE TRANSCEIVER GIVE-AWAY

eci Courier IM
12 Channel Transmit
23 Channel Receive



AGAIN THIS MONTH CB Horizons offers a free CB transceiver to our readers. This month's top prize is eci's Courier 1M, a deluxe triple-conversion base or mobile transceiver offering ultimate performance to its owner. Follow the simple rules outlined below, and on September 17th, **you** may be the proud owner of this fine unit. Also offered, 2nd through sixth prizes, comprised of antennas and meters. These additional prizes will be announced with the winner's names in the November issue.

1. This is not a contest. No box-tops, no money, no jingles. Just prizes!
2. Contest is sponsored by Data Servicing, Inc., operator of the Horizons data service bureau.
3. Simply fill in the Give-Away card to the left of this page, place a stamp on it, and drop it into the mail with a postmark prior to midnight September 10th.
4. All cards will be placed in a single container and one card will be drawn from the container by a bonded public accountant on September 17th. The individual submitting the card drawn from the container is the winner of the eci Courier 1M transceiver.
5. All cards become the property of Data Servicing, Inc., and no cards may be returned.
6. All employees or their immediate families of Horizons Publications, Inc.; Data Servicing, Inc., are not eligible for prizes.
7. Five additional prizes consisting of CB test equipment and/or antennas will be awarded to the individuals submitting the 2nd through sixth cards drawn from the container.
8. Winners will be notified by mail on September 18th and announced in the November issue of CB Horizons.
9. Valid entries will consist of the tear-out card provided to the left of this page, or reasonable facsimile.
10. Data Servicing, Inc. and/or Horizons Publications, Inc. assumes no liability for the execution of the principles or systems involved. Likewise, no responsibility is assumed for patent infringement, if any, resulting from application of this information.

NEXT MONTH The transceiver Give-Away will feature Lafayette's HE-90WX

SUBMIT OFFICIAL ENTRY CARD
(or reasonable facsimile) before midnight
September 10th.

SIDEBAND BASICS

—Part One—

by
EDWARD F. HARRIS,
Executive Vice President
Dynascan Corporation
MARK PRODUCTS DIVISION

The Class D Citizens Radio Service which went into effect during 1958 has resulted in the creation of a whole new segment of the two-way communications industry. This service has proved to be unique in many respects. However, primarily due to the ease of licensing and the availablity of reliable and relatively inexpensive equipment, the growth has been phenomenal and using numbers of licensees as the sole criteria, it is obvious that this represents the largest single segment of the two-way communications field at this time with the promise of continued rapid growth.

The major fear as with all other communications services at present is that saturation will occur due to lack of operating frequencies. In some areas such as large metropolitan centers, this saturation has already occurred and utilization of the available 23 channels is approaching the 100 per cent condition during many hours of the day and night.

It is interesting to review not only the history of the two-way communications field but the early attempts to establish a Citizens Radio Service and finally, the creation of the present Class D Radio Service in recent years.

The Class D Citizens Radio Service offers us a unique opportunity as a testing ground for the entire two-way communications field since its phenomenal growth has compressed the time scale to a few years and has presented us with relatively inexpensive means of evaluating the future potential of all communications frequencies. Such evaluation is taking place and can be continued with relatively little disruption of essential communications services and at the same time be accomplished at relatively low cost and with almost immediate answers in terms of months or years to questions which will not be resolved before the end of this decade so far as the standard commercial two-way frequencies are concerned.

Prior to World War II, the majority of two-way communications between base station and mobile units was carried on within the public service applications such as police two-way radio. In those days it was the normal operating procedure to utilize a relatively low frequency just above the broadcast band such as 1700 to 1900 kc. for the base station transmit frequency. The mobile units therefore received these police calls on receivers tuned just above the broadcast band and transmitted back to the base station on frequencies in the 30 mc. range. Most equipment at that time was AM and while such communication was rather wide-spread throughout various police systems, due to the obvious need for public safety, no such two-way communications facilities existed for applications as widespread as we know them today in all types of business.

During the War such police and public safety systems continued to expand as a necessary civilian function and by the middle 1940's the majority of base station and mobile units were in operation in the 25 to 50 mc. band with FM type equipment. Shortly after the termination of World War II the FCC made provision for some of the

first two-way licensing of business radio communications. This occurred in the taxicab radio service with the assignment of specific frequencies in the 150 mc range for such applications. The obvious advantages to the operator of a taxicab system of two-way radio made this service an immediate success and a large expansion of commercial two-way radio occurred in the late 40's and early 50's.

By 1950 the state of the art had improved to the point where satisfactory FM two-way equipment could be produced for frequencies as high as 450 mc and due to tremendous congestion in large metropolitan areas of the available taxicab radio channels in the 150 mc range, there was great pressure brought to bear by taxicab operators on the manufacturers of two-way equipment to provide them with satisfactory 450 mc equipment in order to obtain so called interference free operating channels. The FCC at first assigned the 450 mc band on an experimental basis and one of the early users of equipment in this range was a large mid-west taxicab company pioneering this band with the aid of equipment manufacturers solely because expanded operation in the 150 mc range was impractical due to congestion of those taxi frequencies.

During this same period the FCC allotted a Citizens Radio Service in the 460 to 470 mc range. The frequencies near the center of the band around 465 mc were assigned for relatively simple types of equipment not requiring crystal control and the band edges in the 460 mc region and the 470 mc region were restricted to the more sophisticated designs using crystal control and the most up to date techniques. Power output however, was limited.

Due to the rather poor stability of the equipment, the low power output, and the general problems of poor sensitivity, higher transmission line losses, the 460 mc Citizens Radio Serivce never experienced an apprecable growth and eventually resolved itself into a high quality commercial type service. It would seem that the primary reason for this situation was that the lower cost equipment was simply not adequate for reasonable service or communication over any reasonable distance, while the equipment

ABOUT THE AUTHOR

Edward F. Harris heads up the Mark Products Division of the Dynascan Corporation, with a long successful history of contribution to the growth of two-way communications. Mark Products' many and varied lines of antennas, for citizens, commercial and amateur applications, including an extensive product line in the microwave field, has developed over something more than a decade under Mr. Harris' guidance and direction.

Author Harris pioneered amateur radio sideband transmission and reception in the mid-west and speaks with more than a decade of sideband experience. His firm has recently announced a new 5 channel single sideband transceiver for Citizens Band, indicating the pioneering spirit that prevails at Mark Products under his leadership.

He is a recognized authority on the subject of sideband transmission methods, and we welcome him to the pages of CB Horizons as a contributing author. Part two of this series on Single Sideband for CB will appear in our October issue.

The Editors

that would perform in these frequency ranges due to requirements of crystal stability, power, etc., ranged in cost between $750 and $1,000 per unit.

Therefore, by the time the Class D Citizens Radio Service in the 27 mc region went into effect during 1958, a certain amount of interest had been generated to the public due to the previous attempt at 460 mc and, due to the fact that the state of the art had long since established good designs and inexpensive components for this frequency range there was a natural and immediate growth in this field. It is an excellent example of the potential inherent in any such service once adequate equipment is available at reasonable cost to the public.

1963 represents the fifth year of existence of the Class D Citizens Radio Service and we are now faced with upwards of 450,000 licensees and some figures point to as many as one million operating units on the air. This is an extremely impressive growth and represents a rather extensive industry with many manufacturers producing excellent AM equipment and accessories for the service. The public has had an opportunity to evaluate the equipment and the performance possibilities of the service and, in general, has accepted the limitations and gone ahead with the performance capabilities since they no doubt provide for a need which cannot be accommodated in ay other manner.

In recent months and in various publications, many proposals have been forthcoming on possible ways to expand the Citizens Radio Service. Most of these proposals have in common the requirements that the FCC be petitioned for additional frequencies and these take the form of frequences in the 10 meter Amateur band as well as other proposals for frequencies in and around the 30 mc region. The fact is that such proposals have very little possibility of being implemented even to the extent that some of them are not within the power of the FCC to grant due to legal considerations.

At any rate, any thoughts or proposals toward the granting of additional frequencies for the Citizens Radio Service face an uphill battle and many, many years, if ever, of coming to the point of bearing fruit.

At this time and as a matter of fact, ever since the creation of the Class D Citizens Radio Service, there exists the potential for the creation of a completely new Citizens Radio Service. Actually, there are a minimum of 46 channels in existence at the present time and available to the entire Citizens Radio Service provided only that intelligent and straightforward consideration be given to state-of-the-art techniques now in existence capable of exploitation to everyone's advantage.

The possibilities are exciting and the most interesting consideration from an engineering standpoint is that the potential exists for a practical and profitable demonstration to the entire communications fraternity that a natural resource of such great importance, namely the radio frequency spectrum, can be utilized with a 100 per cent increase in efficiency and that the industry and Citizens Band Service can grow for many years to come without the danger of saturation.

To most of the public interested in the Citizens Radio Service, single sideband has remained a basic mystery and more or less a word associated with sophisticated radio techniques not necessarily of interest to those who would engage in the type of communications normally associated with this band. It is difficult enough to understand the techniques of AM communications and in general, the major requirement is that the equipment work properly when the button is pushed so that the message can get through.

It remains for those of us who are more technically inclined and interested in what goes on behind the front panel of our equipment to delve into the various facets of available techniques for two-way communications now in existence and which can eventually lead toward vast improvements of the service. I will therefore attempt in the following paragraphs to describe what sideband is; how double sideband differs from single sideband; and what is to be expected when such techniques are used alongside of and in conjunction with the present run of the mill AM Citizens Band transceivers.

An initial consideration in all two-way radio communications is the factor of fre-

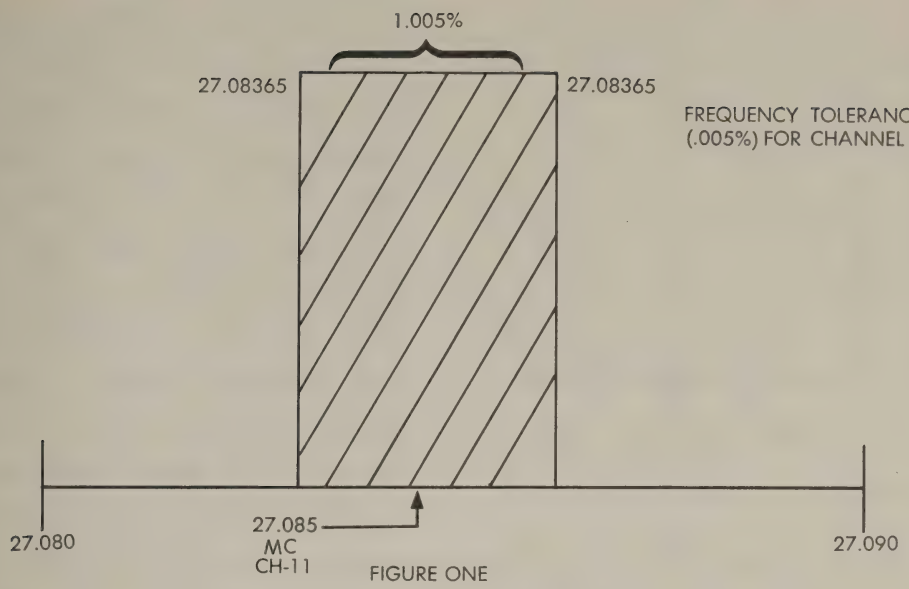


FIGURE ONE

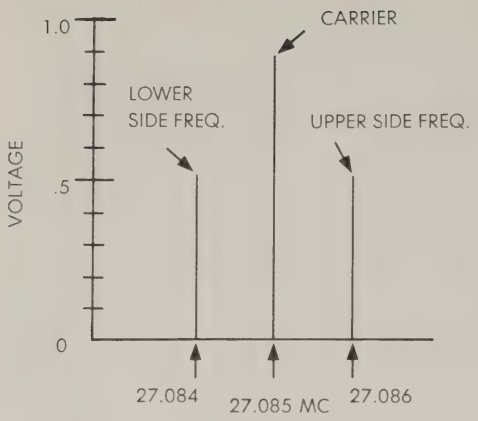
quency stability. In accordance with FCC specifications for the Class D Citizens Radio Service, all transmitters must maintain frequency stability within .005 per cent of the assigned channel frequency. In addition, the normal assigned channel covers 10 kc or plus and minus 5 kc around the assigned channel frequency. Therefore we see that the plus and minus .005 per cent represents approximately 1350 cycles allowable variation from center frequency on each channel and this is diagrammed in Figure 1 for Channel 11 which is centered on 27.085 mc and which extends from 27.080 to 27.090 mc for a total of 10 kc.

Thus Channel 11 has a frequency of 27,085,000 cycles per second as the assigned frequency and since FCC specifications allow for crystal drift of .005 per cent this amounts to very nearly 1350 cycles either side of center so that the AM transmitter carrier may be transmitted on any frequency from 27,083,650 cycles per second to 27,086,350 cycles per second for a total permissable variation of 2700 cycles.

These requirements, of course, have proved to be no problem at the present state-of-the-art since inexpensive crystals operating over normal temperatures encountered in the mobile service can hold tolerances well within these limits. The important consideration, however, is that AM communications can perform satisfactorily with the amount of frequency drift as described above and while there will be a slight amount of deterioration due to netting (perfect netting means that all transceivers are exactly on the same frequency) the degradation is not sufficient to cause trouble.

So far as the AM receiver is concerned, normal AM receivers will accept a band pass in the IF amplifiers of around 10 kc and most commercial units go beyond this to approximately 12 kc. Therefore, there is very little problem with undue receiver desensitization due to drift of the transmitter or the receiver with respect to the center frequency of the channel. It is always best however, that even in AM operation, individual transceiver units operating in a system be carefully netted to each other and this is best accomplished by careful adjustment of the crystal oscillator in the transmitter and peaking of the receiver so that all units net as closely as possible with the base station frequency. All transmitter adjustments, of course, must be made by a licensed first or second class commercial operator.

When in operation, the AM transmitter performance is based upon the existence of its carrier which is transmitted as a continuous radio wave on the channel frequen-



FREQUENCY SPECTRUM OF AM TRANSMITTER

FIGURE TWO

cy. For example, on Channel 11 this carrier under ideal circumstances would be transmitting continuously when the microphone button is pushed on 27.085 mc. So long as no speech or modulation is present, the carrier frequency is the only frequency transmitted and represents an extremely narrow frequency distribution at the 27.085 mc point.

Now, if this continuous (wave) carrier is made to vary in its amplitude at a single audio-frequency rate such as a 1,000 cycle note whistled into the microphone, a steady tone will be heard in the AM receiver which is tuned to the transmitter frequency. It is interesting to note that when there is no voice or tone modulation applied to the AM transmitter, the presence of the signal on the air is made apparent by a slight variation in the background hiss level and the carrier itself is nothing more than a quiet hiss or even in some cases merely the absence of background noise.

Considering again the 1,000 cycle note applied to the transmitter carrier as modulation and which causes the carrier to vary at this rate, a frequency spectrum is transmitted by the AM transmitter and this is shown in detail in Figure 2. It is apparent that now we are transmitting three frequencies, namely the carrier at 27,085, an upper frequency of reduced amplitude at 27,086 or 1 kc above the carrier frequency, and another similar frequency at 27,084 also of reduced amplitude. The 27.084 frequency and the 27.086 frequency are known as the lower side frequency and upper side frequency respectively.*

If instead of a single tone such as the 1,000 cycle whistle, this variation in amplitude or modulation consists of many tones or audio frequencies such as those of speech, then the transmitter output will vary in accordance with these frequencies and the sound reproduced at the receiver will correspond to the original voice. This process is known as amplitude modulation. All of the speech audio frequencies which are impressed upon the carrier of the amplitude modulated transmitter appear simultaneously both in the upper sideband and in the lower sideband and as with voice communication, if these frequencies are restricted so that no voice frequency beyond 3,000 cycles is allowed to impress itself upon the transmitter carrier, the sidebands will extend above the carrier frequency as far as 3,000 cycles as well as below the carrier frequency as far as 3,000 cycles.

It is important to recognize that in the amplitude modulation technique, none of the speech information exists in the carrier, and in addition, all of the information required is reproduced simultaneously both in the upper sideband and in the lower sideband. The carrier is necessary solely because of the receiver design and detection systems used and does exactly what its name implies, that is, it carries a reference which the receiver requires in order to decode or translate the information available in the sidebands. If, however, there were some means of producing artificially an exact reproduction of the transmitter carrier locally at the receiver, it would then not be important whether or not the carrier were transmitted or available to the receiver in order to decode the information in the sidebands.

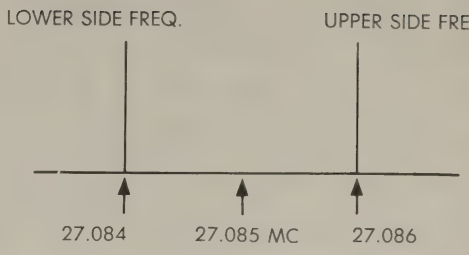
While it is true that an artificial carrier can perform the necessary function at the receiver, it is also necessary that this artific-

*Single Sideband Communications Handbook, by Harry D. Hooton, Howard W. Sams Co., Inc., 1962.

ial carrier be made available under very exacting frequency tolerance. That is to say, the artificial carrier at the receiver must be injected (added back to the signal) at a frequency which is for all practical purposes exactly the same as the frequency which **would have been** transmitted by the transmitter. The reasons for this are somewhat complex and will be covered in the next section on double sideband.

A final consideration for AM must be one which evaluates the power distribution in the AM signal. As shown in Figure 2 when the carrier is modulated 100 per cent by a pure tone, the voltage value at either side frequency will be **exactly half the carrier voltage.** Since the power is proportionate to the square of the applied voltage, the power in each side frequency will thus be equal to $(0.5)^2$ times the carrier power. If we assume that the carrier input power is five watts as this value is the maximum which is allowed in Class D Citizens Band Service, the power in each side frequency will thus be equal to .25 times the carrier power or 1.25 watts in each sideband. Since two sidebands are present, the total sideband power is 2.5 watts input. Assuming 60 per cent efficiency for the final amplifier, the output power in the (two) sidebands will be 1.5 watts, and since all the information in amplitude modulation is carried by the sidebands and not the carrier, we may establish a reference level of 1.5 watts for the average CB transceiver in AM service. This reference, 1.5 watts, represents a peak output power level. Fortunately in the AM case, the receiver is capable of extracting the total power in both sidebands and therefore, when considering the total AM circuit from transmitter to receiver in a two-way system, we can reference the 1.5 watt level.

In addition, since Class C final amplifier efficiencies vary in some cases may produce as much as 70% efficiency, this 1.5 watt figure could vary slightly. For example with 70% efficiency it could go as high as 1.75 watts. However, it is felt that 60% is a reasonable average efficiency for most CB transceivers in use today and especially in consideration of the variations in loading adjustment, tuning, etc. which occur over a reasonable period of time while they are in service. It is felt that to attain 70% efficiency consistently, a routine weekly or monthly tuneup procedure would be required. Experience with actual power measuring equipment shows that 60% efficiency is about average for most units tested.



TRANSMISSION OF UPPER AND LOWER SIDE FREQ. CARRIER ELIMINATED.

FIG.-3

Consider now the condition which can be created by generating a signal from the transmitter which would be similar to the AM signal described in Figure 2 except for the elimination of the carrier. This is shown in Figure 3. It will be noted that there is no power transmitted at 27.085 which is the carrier frequency and all the power is concentrated in the two sidebands, one above and one below the carrier frequency. There are various methods of generating double sideband and it would be reasonable to assign an efficiency of 60 per cent to the average double sideband transmitter output stage.

In addition, since there is no carrier power, essentially without modulation there is no transmitter power developed. Under these conditions and in consideration of the many complex wave forms which exist for various voice characteristics, etc., a general rule of thumb is that the average power reading will produce peak powers of the order of a factor or two. From the FCC regulations, it can be stated that the power input to the transmitter must be measured with a plate current meter having a time constant not greater than .25 second. This means that with a suddenly applied signal

the meter must read 63 per cent of its full scale reading in .25 second or less. With such a meter and the average distribution of voice peaks, it is reasonable to say that voice peaks will reach approximately 10 watts peak input power when the .25 second response plate meter is indicating 5 watts average plate power input. Therefore, in Citizens Band services, we may assume that peak input powers will run of the order of 10 watts maximum.

In the double sideband transmitter case therefore, we may consider the power in the two sidebands divided equally between the 10 watt peak capability or a peak power input of 5 watts in each of the sidebands. Assuming 60 per cent efficiency, we may consider that we are obtaining an output power of 3 watts per sideband or a total of 6 watts peak.

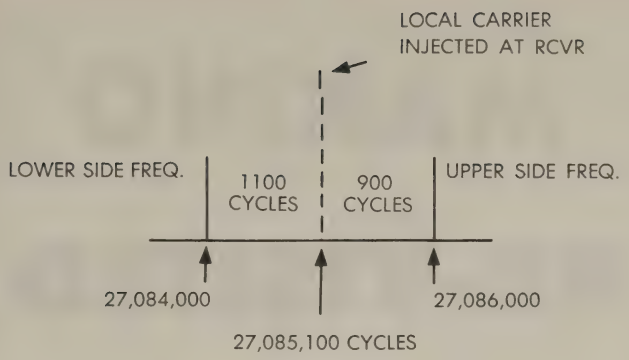
At first glance this would indicate a rather substantial increase of transmitter power in the case of double sideband over the AM. Since the intelligence is carried in the sidebands, we then must consider that we have created approximately a four times increase in transmitter power by going from AM to double sideband maintaining our average input power at no more than 5 watts.

So far, this looks good from the viewpoint of utilization of double sideband for improved services in Citizens Band Radio. The **great problem** with double sideband transmission occurs primarily in the recovery of the intelligence in the two sidebands at the receiver. Referring to the above discussion regarding injection of an artificial carrier at the receiver, it becomes apparent that with double sideband transmission and no carrier, the receiver is unable to decode the intelligence in the sidebands unless an artificial carrier is provided for this purpose at the receiver. This consideration immediately brings us back to the problem of frequency stability. Whereas in AM transmision, the carrier frequency is allowed to vary within FCC limits by a total of 2700 cycles, this does not cause a problem since all the information in the sidebands is constantly being transmitted referenced to this AM transmitted carrier and therefore even though the carrier might vary in frequency over a period of time, the sidebands still retain their proper relationship to the carrier and reproduce at the receiver in proper proportion from a frequency response standpoint.

Thus, referring to Figure 2 with the transmitted carrier in AM at 27.085, the tone received in the receiver will always be 1,000 cycles since the 27.086 is 1,000 cycles removed from the carrier and the 27.084 is 1,000 cycles removed from the carrier. However, consider the situation which might occur if instead of transmitting the 27.085 carrier, double sideband only was being produced with the 27.086 and 27.084 transmitted and no signal at 27.085. Now, for recovery of the information in the sidebands at 27.086 and 27.084 or in other words, to produce a 1,000 cycle tone at the receiver, the receiver must be capable of injecting a carrier frequency of exactly 27.085 locally. As it turns out, this is an extremely difficult thing to accomplish and in practice, except for very expensive approaches, it turns out to be practically impossible.

For example, in the double sideband situation, suppose the receiver injects a local carrier of 27,085,100 cycles. (See Fig. 4.) The upper sideband of the double sideband signal then will produce an audio tone in the receiver of 900 cycles since it is being transmitted on a frequency of 27,086,000 and **simultaneously**, the lower sideband being transmitted on a frequency of 27,084,000 cycles will produce an audio tone in the receiver of 1,100 cycles. The two audio notes in the receiver will then be 900 cycles and 1,100 cycles and, in addition, there will be a difference frequency produced of 200 cycles. In other words, the pure tone of 1,000 cycles originally transmitted by the transmitter now comes out at the receiver as a badly distorted intermixed signal with several audio frequencies.

Of course this example is greatly simplified in that only one tone has been used and with the complex frequency and amplitude distribution in the normal voice transmission, extreme distortions occur which make the double sideband mode of transmission almost unintelligible and at the very best, distorted during more than 90 per cent of the time.



RECOVERY AT RECEIVER OF MORE THAN ONE TONE BY INJECTION OF OFF-FREQ. LOCAL CARRIER-DOUBLE SIDEBAND TRANSMISSION.

FIGURE FOUR

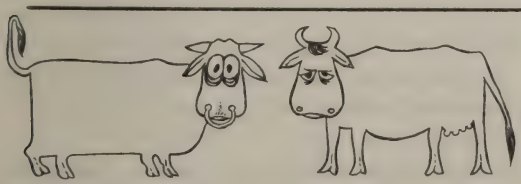
This difficulty can be overcome by careful phase locking of the reinjected receiver carrier. However, the equipment necessary to provide for this function is extremely expensive and complicated to build and far outside of possible consideration for Citizens Band services.

In addition, the example shows the problem as it would exist should the transmitter maintain its frequency exactly and the failure to net with the injected carrier is a fault of the receiver only. However, in actual practice both the receiver and the transmitter carrier frequencies would tend to change and therefore, the difficulty is compounded. Double sideband is unable to tolerate even small differences in carrier frequency such as just a few cycles or as little as 50 cycles or less.

Another condition of the double sideband mode of operation exists at the receiver end in that the receiver must be capable of sufficient bandwidth to receive both upper and lower sidebands. This then means that the double sideband receiver must have a bandwidth capability of the same order of magnitude as the AM receiver and therefore, there is no advantage in the system gained at the receiver. The only advantage gained in the transmission path is that of the capability of putting more power into the two sidebands in double sideband than would be attainable in AM and still stay within the FCC regulations. Therefore, for the double sideband mode of operation, the overall system improvement even with perfect reinjection of receiver carrier (which is a practical impossibility within economic limitations) would be four times power or approximately 6 db systems gain.

NEXT MONTH

Part two of this series on practical sideband for CB will discuss how single sideband is achieved, and what limits it must operate under.



LICENSE TRENDS

The Federal Communications Commission advises that the four week period ending July 15 saw 16,470 Class D licenses granted. This averages out to just 4,100 new licenses in the Class D service per week.

Horizons Publications' Washington office advises that the Commission has put on temporary office help during the June-July-August period, in an apparent efforts to handle the added influx of CB licenses applications that also comes with the summer months.

CB license processing time continues to run between 5 and 7 weeks, according to informed Washington sources.

MAKINO RE-VISITED

In the June, 1962 issue of CB Horizons, and at greater length in the 1962-63 CB Radio Mobile Handbook from Horizons, we discussed the Makino Noise Limiter circuit, a devilishly competent device for quieting your noisy mobile transceiver right down to zilch noise.

The volume of mail that has resulted from this report led us into further experimentation in the Horizons Lab, with an eye towards incorporating the Makino into other than the Lafayette HE-20 series sets described in the initial report.

For the many thousands of **new** Lafayette HE-20 series (i.e. HE20, HE20B, HE20C) owners since the initial report appeared, we will also go over once again installing the Makino in this series of transceivers.

The Makino noise limiter is a fairly recent development of a Japanese electronics engineer by the same name. It is inherently simple in design, and it attacks noise where it is most vulnerable; in its 'spike form'.

The Makino noise limiter circuit **should** and probably would work in all types of tranceivers. However, one basic problem exists which we feel most CB'ers won't be willing to tackle. In the design of some transceiver ANL - squelch-detector circuits, sufficient leakage paths are provided **around** the limiter circuit that the Makino is not effective. In other words, noise pulses leak through adjacent circuits, through to the audio amplifier and speaker, and are not restricted to passing through the sets existing noise limiter circuit.

Keep in mind the Makino noise limiter replaces an existing noise limiter circuit. It is a more efficient circuit than that probably in use. Some tests are underway to utilize the Makino in conjunction with existing series gated circuits, but they are not complete at this time.

Two particularly popular sets have been found to be non-responsive to the Makino. This is apparently due to the afore - mentioned **leakage paths** that exist. These are (and this is to in no way slight the individual sets, it merely points out their inability to adapt to the Makino) the Utica MC-27 and the Sonar Model E transceivers.

ONE PROBLEM

The addition of the Makino limiter to your transceiver will probably cause the S-meter readings to go down considerably. There is a way to cure this, but in curing the Makino resultant lower S meter readings (particularly in the Lafayette HE-20 series), you make the receiver circuit prone to overload from strong signals. In other words, strong signals become unmanageable and tend to broaden out the receiver, sometimes causing distortion in the audio in the receiver if the overload is severe enough.

This happens **only** if you attempt to cure the receiver overload by removing the resistor identified as R7 in diagram 2-A, and another resistor not shown, which connects to an i.f. transformer, approximately 1½ inches nearer the crystal sockets. Both resistors are 10 megohms in value. This will cure the low-reading S meter, but you are chancing overload by removing these resistors.

There apparently is no cure to this small problem in the HE-20 series sets.

At least one manufacturer has adapted the Makino noise limiter circuit to his pro-

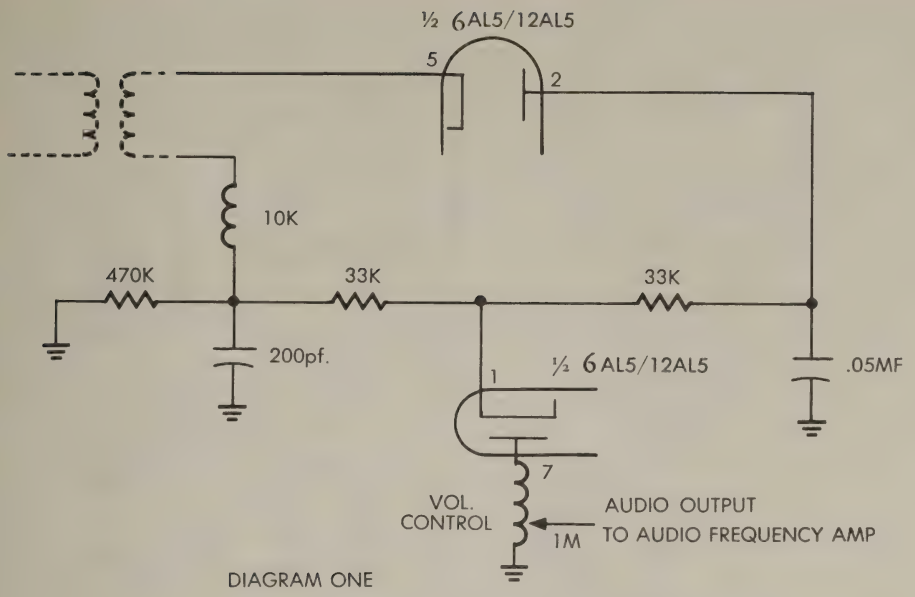


DIAGRAM ONE

duction run transceivers. Biggs Electronics, Inc., Peru, Illinois has in their model LA-101AN transceiver the Makino circuit as shown in our June, 1962 issue, suitably adapted of course to their own circuit.

INTO THE LAFAYETTE

Diagram 1 is the basic Makino circuit, which as you can see replaces the existing ANL (automatic noise limiter) and detector circuit.

To install the Makino into the HE-20 series of transceivers (including the B and C sets), follow the before and after diagrams in 2A and 2B.

First of all, remove the HE-20 chassis from the case by removing the screws on the bottom, and at the top of the front panel. Place the chassis on the workbench, upside down with the component parts looking at you.

Next locate the socket for tube V5, the 6T8. Remove all connections from pins 1, 2, 3 of this socket. Remove the 1 meg resistor (color code brown-black-green) from the set and place it aside to use it later.

Remove the green lead from terminal 1 of i.f. transformer T3 (the other end of this wire did go to pin one of the 6T8). Also remove the green lead from pin 2 to C4, and discard the wire. Disconnect the lead from the 470 K resistor R5 (color code yellow - purple - yellow) which connects to capacitor C4. Finally, clip out the two 220 K resistors (color code red-yellow-red) and place them in your junk box.

At this point you have completely disconnected all of the ANL and detector circuit in the HE-20 transceiver.

Now to start rehabilitation. Connect the plus lead (or cathode end) of the 1N34 diode (which originally went to pin 3 of the 6T8 socket) to terminal 1 of T3, and solder.

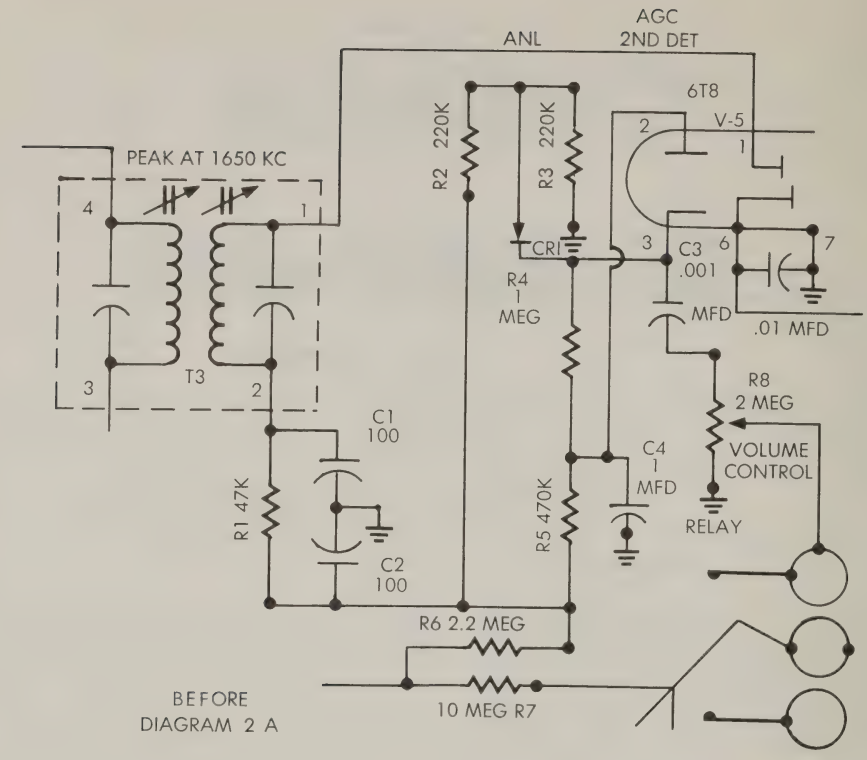
(NOTE: Superior results will be obtained if you substitute a 1N459 diode at this point for the 1N34 used by Lafayette).

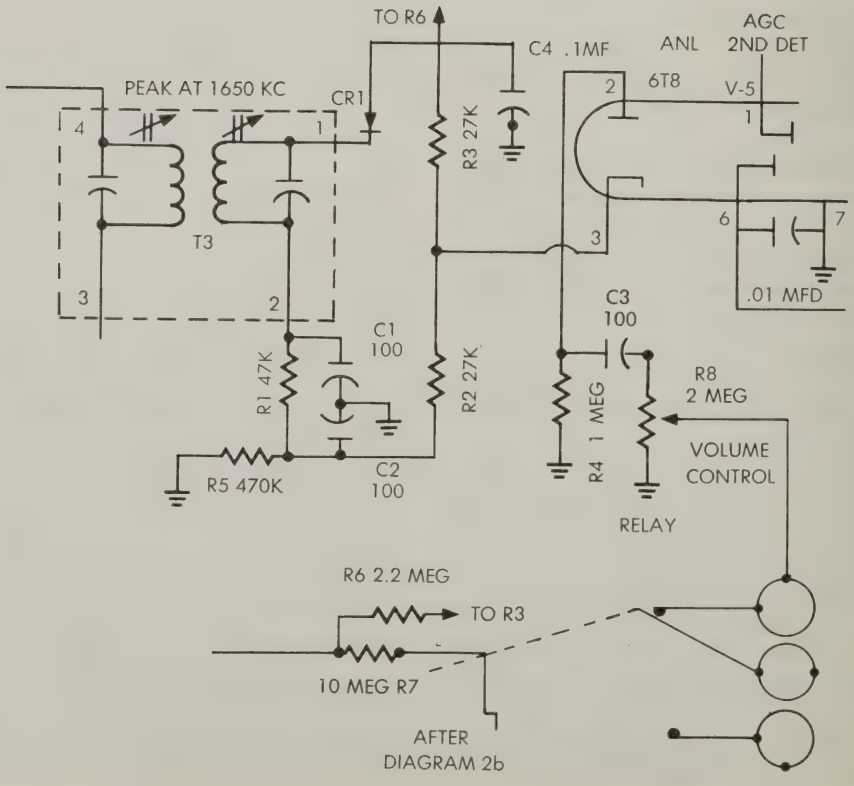
Now, connect the free end of R5 to ground. Connect the free end of the diode to the ungrounded end of C4 (this is the junction point where R4 and R5 were originally connected). Connect a new 27K resistor from this same terminal to pin 3 of the tube socket of the 6T8. And connect another new 27K resistor from pin 3 to the junction of R1, R5, R6 and C2.

Connect R4 (the 1 meg resistor put aside in the demolition process earlier) from pin 2 of the tube socket to ground, and connect the free end of C3 to pin 2 also, and solder.

The conversion is complete.

As stated earlier, response to the original treatment in the July, 1962 CBH of the Makino was overpowering. During the 13


AGC
ANL
2ND DET
6T8
V-5
PEAK AT 1650 KC
R2 220K
R3 220K
CR1
C3
.001
MFD
.01 MFD
R4
1
MEG
R8
2 MEG
VOLUME
CONTROL
T3
C1
100
C4
1
MFD
RELAY
R1 47K
R5 470K
C2
100
R6 2.2 MEG
10 MEG R7
BEFORE
DIAGRAM 2 A


TO R6
C4 .1MF
AGC
ANL
2ND DET
6T8
V-5
PEAK AT 1650 KC
CR1
R3 27K
T3
.01 MFD
C3
100
C1
100
R1 47K
R2 27K
R4 1 MEG
R8
2 MEG
VOLUME
CONTROL
R5 470K
C2
100
RELAY
R6 2.2 MEG
TO R3
10 MEG R7
AFTER
DIAGRAM 2b

months that have passed since this article was published, literally thousands of letters have been received commenting on the conversion. With very few exceptions, the results were all very worthwhile, according to the letters.

The problems that did occur were along the lines of the S-meter, which has already been discussed, or problems created by the fellow modifying the unit.

For example, a handful of writers stated they experienced no reduction in background noise or had an increase in noise. This was traced to their inserting the 1N34 diode back into the set backwards. Be very sure that the cathode end goes to terminal 1 of T3. If the diode is reversed, you will have no end of grief!

Another cause of this "it increased my noise level" complaint was traced to a poor ground connection on the 470 K resistor (R5). Solder will not take to the HE-20 chassis; the ground connection must be made either to the tube socket mounting ring or to a ground lug (several are available nearby).

Oh yes, don't worry about pin 1 of the tube (6T8). It hangs free now. Do not use it as a tie-point as one fellow did!

Another question raised concerned the wattage value of the 27 K resistors used in the conversion. ½ watt resistors are fine.

Reference is made to CB Construction box, this issue, for a discussion of the S meter problem. This circuit, described in construction box, has not been tested in the Horizons Lab, but does appear to have merit and should do the job.

Basically, the Makino is an excellent circuit. How well it will or will not adapt into transceivers other than the Lafayette HE20 series is an unknown factor. To be perfectly frank, our Lab experience indicates it may be more trouble than it is worth. To this end the Lab continues to work with improved noise limiter circuits with the hope that one fine day we will uncover a **Makino-type** circuit that can be quickly and easily adapted to all transceivers.

FIGHTING ALTERNATOR NOISE

The subject of eliminating generator, ignition, meter and voltage regulator noise in CB mobiles has been detailed in considerlength in this publication in the past, as well as in even greater detail in the CB Radio Mobile Handbook, from Horizons.

One recent development has added fuel to the mobile-noise problem, however. With the switch to Alternator type electrical systems in the Chrysler product vehicles, a new form of noise has appeared on the scene. Alternator noise.

The Horizons lab has been working to solve this type of noise problem and here are the findings of our lab staff.

Diagram one shows the proper method of suppressing noise in Chrysler products which utilize the Alternator (regulator) method of voltage generation.

Where shielded wire is indicated (Alternator to battery, field terminal regulator to field terminal on alternator), use RG-8/U or RG-11/U coaxial cable, the center conductor carrying the power and the shield bonded securely to the auto chassis or nearest ground potential point close in to the center conductor connection.

The 0.1 ufd feedthru by-pass condenser in

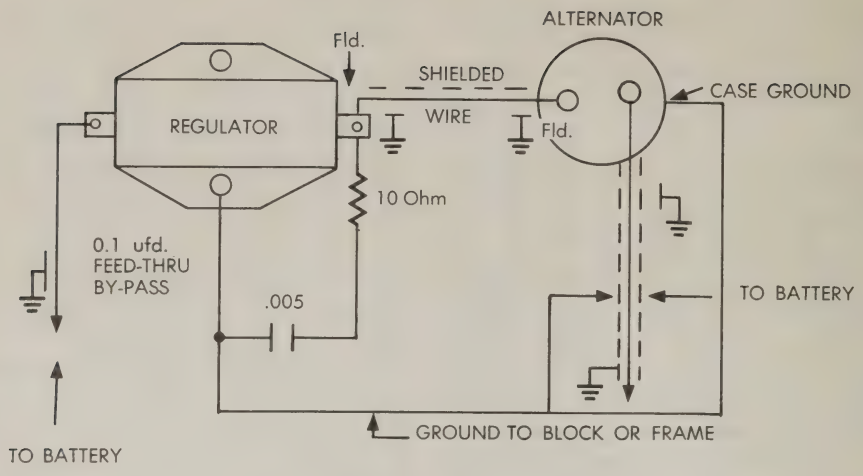


DIAGRAM ONE

the regulator to battery lead should be mounted just as close to the regulator as possible. This is a standard generator by-pass, such as the Sprague Hypass (48P18).

Diagram two shows the proper method of trapping out noise from the voltage regulator and current regulator connections.

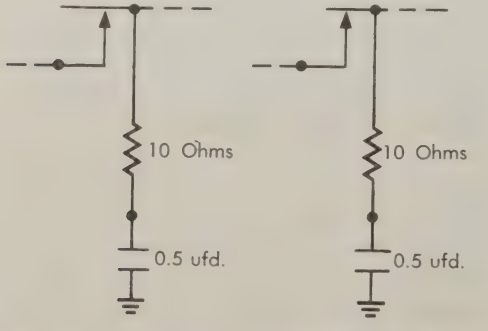
Fasten the grounding end of the 0.5 ufd capacitors to the regulator ground terminal and using small grommets as insulators, drill two small holes in the bottom edge of the regulator cover. Insert the grommets in the holes, feed the free 10 ohm resistor leads through the grommets into the regulator itself. Connect one of the 10 ohm-0.5 ufd combinations to the upper section of the voltage regulator bracket, and the other 10 ohm-0.5 ufd combination to the upper section of the current regulator bracket. These two traps are not shown on diagram one, for sake of simplicity.

FIELD LEAD FILTER

It is additionally suggested that you use a tuned filter network (condenser and coil) in the field lead. In this case, insert the tuned filter and the 0.005 capacitor-10 ohm resistor shown in diagram one (field coil of regulator to ground of regulator case) directly to the field terminal on the Alternator. A suggested schematic is shown in diagram three.

(NOTE: Two tuned-circuit filter circuits have been tested at the Horizons Lab as suitable for the unit shown in diagram three.)

HP Lab



VOLTAGE REGULATOR CURRENT REGULATOR

DIAGRAM TWO

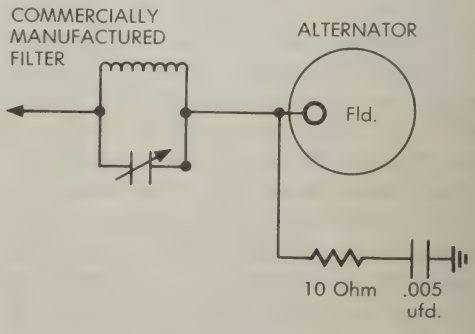


DIAGRAM THREE

PROPOSAL FOR 46 CB CHANNELS

Charles Messenger, 11W4165
Chief Engineer
General Radiotelephone Company
Burbank, California

Part 19 rules regarding the technical requirements for Class 'D' equipment as presently in use were apparently promulgated to encourage and assist the general public to participate in the much needed use of short-range two-way radio systems.

While these requirements allow for the design and sales of relatively inexpensive equipment, and are adequate to provide for the number of frequencies presently assigned in the band-range of 26.965 to 27.255 megacycles, the unforseen growth pattern of this service indicates an immediate need for re-appraisal of these requirements.

It is apparent that this rate of growth will be accompanied by many demands for additional frequency allocations. I fully realize that this may become the most difficult situation to contend with due to the present clamor for non-existant air space on the part of all groups concerned with the field of communications.

In order to avoid any possible confusion or mis-understanding, I should like to take the liberty of approaching each of five separate problem areas now facing Class D radio, as separate proposals.

(Editor's Note: Mr. Messenger here refers to five specific points of contention he sees in Class D problems, the other four —aside from frequency conservation— of which will be covered in subsequent issues of this publication.)

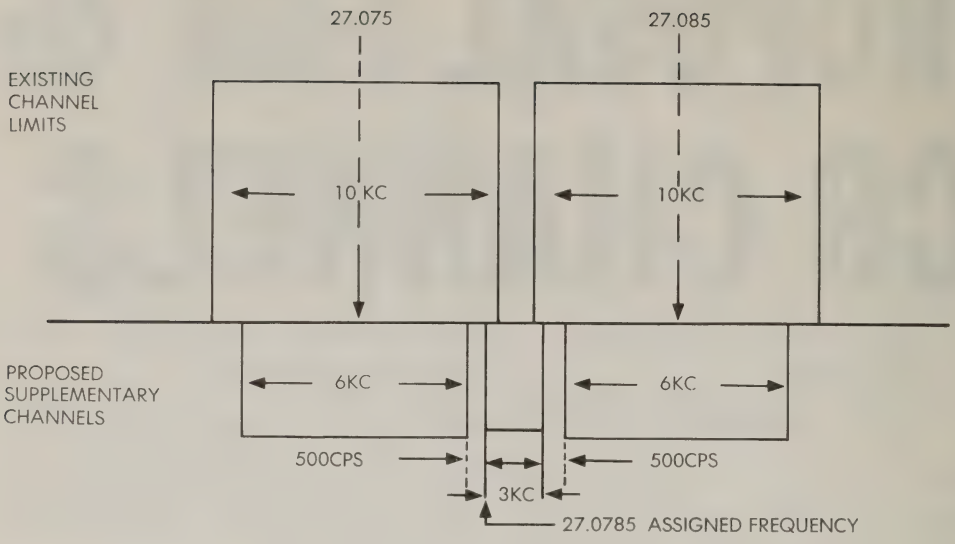
In order to delay this situation for several years, while still allowing for a growth pattern under the present rules and regulations, I humbly submit the following suggestion for consideration as formal proposed rule amendments.

PROPOSAL

Present spectrum limits of 26.965 through 27.255 should be allowed to stand as such. I propose that the present 23 channels with their respective frequencies be allowed to remain as such, to protect the investment of the present users.

Future needs should be planned for by the incorporation within the present frequencies (and rules) of split channel frequencies between existing assigned channels. Due to the present 10 kc channel separation, it would not be practical to make such an assignment, however, due to the limitation of receiving equipment (and transmitter stability as affected by crystal tolerances).

Engineer Messenger herein proposes to the Federal Communications Commission a systematic method for the **establishment** of an additional 23 channels within the present confines of 23 channels, for the development of single-sideband transmission. Using a combination of channel-splitting and channel-width reduction, the proposal seeks narrowing the present 10 kc wide channels to 6 kc, increasing frequency tolerance from .005% to .001%, and the dropping in of 23-3 kc wide channels for upper-sideband operation.



In order to make practical use of the idle space between channels, it would become necessary to limit the use of the proposed new channels to single sideband equipment. This could be accomplished by placing the split channel on the lower edge of the 5 kc slot indicated, and using **upper** sideband, as shown in the chart with this proposal.

Note in the chart that existing channels would be limited to a total occupied bandwidth of 6 kc. Proposed channels would occupy a bandwidth of 3 kc. Adjacent channel separation, from sideband channel to AM channel, would therefore be 500 cycles (0.5 kc) on each side.

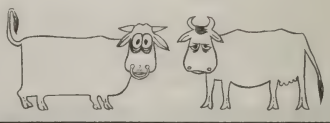
This would of course necessitate a change of center frequency limits (tolerances) from the present .005% to a proposed .001%. In the immediate past, it would not have been feasible to require .001% frequency center limits, for reasons of economy. However, the state of the art at present, along with mass production, has advanced to a point where it would not be detrimental to the end used to tighten frequency requirements.

The proposed 3 kc slot which would be for operation on upper sideband, would of course be limited to .001%, in which case the channel limits would not be exceeded.

CONCLUSION

Under this proposal, we would have 23 existing channels of 6 kc bandwidth. The tolerance of the transmitter, as proposed of .001%, to become effective 3 years from the date of the proposed ruling. 23 additional channels are to be inserted between existing channels, to be utilized for single sideband (upper) only, with a maximum bandwidth of 3 kc as measured from the assigned frequency upward (in frequency).

(Editor's note: This proposal was filed, informally, with head of the Citizens and Amateur Services Division, Ivan H. Loucks, early in June. This proposal grew out of a discussion between Mr. Loucks and Mr. Messenger, as reported on in the August issue of CB Horizons.)



OUR COVER

Volunteers from the Lehigh Valley Chapter, Bethlehem, Pennsylvania of the Citizen Band Relay League, Inc. donated three weekends during this past May to provide communications for a public spirited reforestation project. On our cover, Lehigh Valley member Earl W. Harpel, KCC2997 orders more seedlings by radio while Bethlehams Director of Public Works, Raymond Snyder, samples a seedling. Full story on Page 48.

NINE RULES FOR DEALING WITH FCC INSPECTORS

Here are nine suggestions that may aid you in survival when the FCC field engineer heads into your home town. Its probable that you have never been inspected by the FCC, but your turn will come. It is recommended that you cut this check list out and hang it in your radio shack as a precaution against making a boo-boo when that fateful day arrives.

(1.)

When the re-knowned inspector first enters your domicile and shows his credentials, DON'T start hauling out your Bachelor-of-Anything degree and/or school certificates. He probably has bigger ones (or none at all, in which case you have just committed sure fire suicide).

(2.)

NEVER greet the inspector in the time proven manner of slapping him on his back and uttering "Hi Sam, you S.O.B., what do you hear about Part 19 from Washington."

(3.)

Under NO circumstances try to joke with the inspector. A quip such as "Hey, do you fellows get payola like those disc jockies?" will get you nowhere, with the possible exception of jail or a hospital emergency ward.

(4.)

When it comes time for the kindly inspector to check your transmitter input and output, for crying out loud DON'T offer him the use of your slide rule. (This is an important point — perhaps you had better hide your slip-stick right now, like maybe burying it out next to the ground plane mast. I know a CB'er who offered an inspector his white marvel slip stick only to have the fellow wet one finger, hold it in the air, and then stick the same finger on the opposite hand into the coax output receptacle. He nodded to have the power turned on, turned a little blue and then nodded to have it turned off. Then he wrote down on his report sheet "6 watts—overpowered."

(5.)

It is no longer considered good form to playfully jab the inspector in the ribs with your elbow just as he prepares to site on your antenna, and its height above ground, with his portable transit.

(6.)

There was a time when it was perfectly proper to exhale cigar smoke in the inspector's face while he was checking the crystal frequencies. Since the lung-cancer scare, however, this practice has fallen into severe disrepute. If you feel you must uphold the ancient tradition, substitute a Turkish waterpipe with a filter-tip hose.

(7.)

Many station operators keep a jug of snake-bite medicine on the workbench to ward off sudden attacks of CB skip. If the inspector should spot your bottle, DO NOT offer him a snort. (He will be either a complete teetotaler and the world's only living male member of the WCTU . . . or, you will not have his brand. There are only ten people on the face of this earth who can stomach Rye, but with your luck the inspector would be one of them.)

(8.)

This point is without question one of the most important. If, while making his measurements and conducting his fact-finding session at your base, the inspector should happen to make an obvious mistake (such

LAFAYETTE

World's Citizens Band Headquarters

LAFAYETTE 12-TRANSISTOR
C.B. "WALKIE-TALKIE" with SQUELCH

39.95 2-for-78.88

- Separate Microphone and Speaker
- Fully Transistorized
- Completely Wired — Ready to Operate
- With Carrying Case, Earphones, Antenna, Batteries and Crystal

HE-100L Imported

NEW! LAFAYETTE 10-TRANSISTOR "WALKIE-TALKIE"
Similar to the great HE-100, but without noise squelch.
HA-60L ..... Only 33.95; 2-for-62.90

LAFAYETTE
4-TRANSISTOR
C.B. "WALKIE-TALKIE"
HE-82L Imported

- Sensitive Superheterodyne Circuit
- Crystal Controlled Receive and Transmit
- Range up to 1 Mile
- Rugged Metal Case, Leather Carrying Case, Crystals and Battery

19.95
2-for-38.95

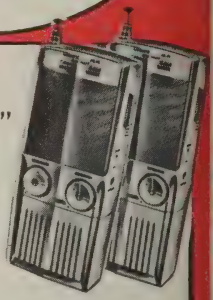
LAFAYETTE 9-TRANSISTOR
C.B. "WALKIE-TALKIE"

25.95 2-for-49.95

- Transmits and Receives up to 1.5 Miles
- Crystal Control on Transmit and Receive
- 9-Transistors plus Diode and Thermistor
- With Leather Carrying Case, Shoulder Strap, Earphone, Antenna, Batteries, Crystals

HE-29C Imported

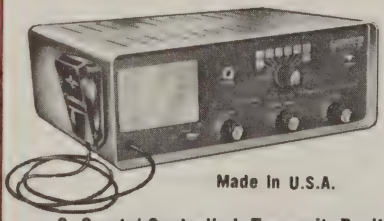
LAFAYETTE 1-WATT
13-TRANSISTOR
C.B. "WALKIE-TALKIE"
with SQUELCH



- 10 Times More Powerful than 100 MW Units
- Powerful 2-Stage Transmitter with Silicon Output Transistors
- Crystal-Controlled Receive and Transmit
- Automatic Noise Limiter, Squelch, AVC
- Plug-in Battery Case, Telescopic Antenna, Earphone, Leather Carrying Case, Batteries, Crystals for Channel 13

66.50
2-for-129.00
Imported HE-75L

LAFAYETTE HB-115 PUSH-TO-TALK C.B. TRANSCEIVER

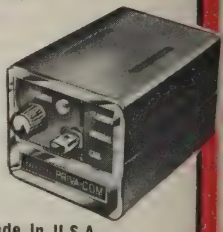


59.95
HB-115

Made In U.S.A.

- 8 Crystal-Controlled Transmit Positions
- Tunable Superheterodyne Receiver Over All 23 Channels
- Pi-Network for Maximum Power Output
- With Push-to-Talk Ceramic Microphone, Mounting Bracket, Channel 15 Transmit Crystal

LAFAYETTE "PRIVA-COM"™
SELECTIVE CALLER



- For Quiet Private Communications
- Tone and Light Signal
- With Mounting Bracket
- Ideal for use with all Lafayette Push-to-Talk C.B. Transceivers

32.50
2-for-62.50

Made In U.S.A.
HA-100

LAFAYETTE
RADIO ELECTRONICS

SYOSSET, L. I., N. Y.
JAMAICA, N. Y.
NEW YORK, N. Y.
BRONX, N. Y.
SCARSDALE, N. Y.

NEWARK, N. J.
PLAINFIELD, N. J.
PARAMUS, N. J.
BOSTON, MASS.
NATICK, MASS.

FREE!

LAFAYETTE RADIO ELECTRONICS 1964 CATALOG NO. 640

LAFAYETTE GIVES YOU MORE IN '64

MORE CITIZENS BAND . . . Lafayette offers more transceivers, more Walkie-Talkies and more accessories than ever before.

MORE STEREO HI-FI . . . More HAM gear • More Test Equipment • More Tape Recorders • More Tools • More Tubes • More Books • More Cameras.

MORE BUYING POWER . . . Choose from Lafayette's three Easy Pay Credit Plans. NO MONEY DOWN — up to 24 months to pay—as little as $5 monthly.

422 Giant-size Pages

LAFAYETTE 23-CHANNEL CRYSTAL-CONTROLLED C.B. TRANSCEIVER

- 23-Channel Crystal-Controlled Receiver & Transmitter—All Crystals Supplied
- Dual Conversion Superhet Receiver Uses 1650 KC and 282 KC IF's for High Selectivity and Sensitivity
- 10 Tubes plus 3 Silicon Power Rectifiers for 17 Tube Performance

159.50

HB-222

Delivery Oct. 1963

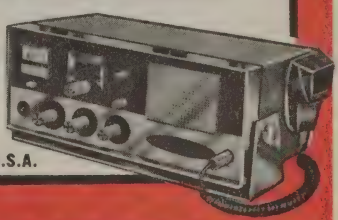
Made In U.S.A.

LAFAYETTE DELUXE DUAL-CONVERSION C.B. TRANSCEIVER

- Super Selectivity, Sensitivity and Stability
- 9 Tubes plus 3 Silicon Diodes plus 2 Crystal Diodes for 17 Tube Performance
- Built-in 117V AC Power Supply and 12V DC Mobile Transistorized Power Supply
- With Bracket Handle, Push-to-Talk Ceramic Mike, Transmit and Receive Crystals for Channel 15 plus Crystal for Dual Conversion

129.50

HB-111



Made in U.S.A.

LAFAYETTE HE-20C DELUXE C.B. TRANSCEIVER

Made In U.S.A.

109.50

- 8 Crystal Receive Positions, 8 Crystal Transmit Positions
- Built-in Selective Call Circuitry and Socket
- 14 Tube Performance
- Built-in 12 or 6-Volt Power Supply
- With Push-to-Talk Ceramic Mike, Channel 9 Transmit and Receive Crystals

Mail the Coupon for your FREE Catalog

LAFAYETTE RADIO ELECTRONICS
Dept. CBI-3
P. O. Box 10
Syosset, L. I., N.Y. 11791

Please send me the free 1964 Lafayette catalog No. 640.

Name .....

Address .....

City ..... Zone ..... State .....

as trying to spot your transmitter signal on the crystal spot position, while the receiver is still on crystal control), do not (and I repeat — do not) jump up and down in a hilarious show of glee while beating on the wall with Gargantuan blows, and wind-up the display by collapsing on the floor with a climatic shout of "How stupid can you get!" This manner of demonstration is no longer considered in good taste.

(9.)

Above All — When the ordeal is over and the inspector is preparing to leave your station, DO NOT ask him for your Green Stamps. (There is nothing to prevent him from marching right back inside and inspecting all over again. You and he couldn't possibly survive two inspections in the same day.)

OZZIE

ACBA NATIONAL CONVENTION

A SOLEMN AFFAIR

The American Citizens Band Association First National Convention, held over the weekend of June 28, 29 and 30 in the birthplace of the ACBA, Kingsport, Tennessee, was an eye-opener to all delegates in attendance.

Literally dozens of CB clubs, from Ohio, Indiana, North Carolina, Massachusetts, Pennsylvania, Virginia, Mississippi, Oklahoma, Illinois, Florida and perhaps a dozen other states that escape this reporter at the moment, sent representatives to the session. The CB club reps were on hand to learn just exactly what the ACBA could do for their clubs, how the ACBA intended to handle delicate FCC problems, and what part CB'ers in California, Illinois, Massachusetts (and all points between) would play in the democratic processes of the organization.

Two informal-formal sessions were held, both on Saturday. The sessions were presided over by Paul W. Thacker, President Pro-Tem of the association, and were conducted in an open-forum (town meeting) setting.

This reporter was impressed with the vast fund of knowledge these representatives brought with them. One CB'er from Virginia displayed uncanny knowledge and legal background on matters of FCC and court decisions affecting freedom of speech and federal regulation of what you can and can't say over the radio.

Another CB'er from Massachusetts detailed several methods currently being used by the Boston FCC office to police the 27 megacycle band in New England. He reported that the Commission provides sealed and locked tape recording units to volunteer CB'ers, which are attached to the CB'ers transceiver. The transceiver receiver is left on, and the tape recorder notes everything heard by the transceiver. When the tape is filled, the unit is returned to the FCC's Boston office, the unit unlocked and the tape removed, a new tape inserted, and the unit goes back to the CB'er for more tape recorder monitoring.

This brought up the question of whether or not monitoring information obtained in this way can be utilized for violation notices.

A CB'er from Florida reported that he had received a citation on which the issuing office (Ft. Lauderdale) admitted that they had not heard his transmission, but they had heard a skip station in Indiana repeating back the cited station's name and addresses,

Shortest distance between two people...

. . . is any Heathkit 2-way Citizen's Band Transceiver . . . ideal communications link between home and car, car and office, boat and shore!

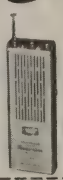
Wherever you go, whatever you do, there's a low-cost Heathkit CB Transceiver to give you instant communications. Take Heathkit's latest for instance. The versatile MW-33 has several advanced features for exceptional 2-way communications! Built-in 3-way power supply for 6 and 12 VDC or 117 VAC operation . . . 5 crystal-controlled transmit-receive channels . . . "vernier" variable receiver tuning to cover all 23 CB channels . . . receiver RF stage for long-distance reception . . . crystal filter with on/off switch to minimize adjacent channel interference . . . low-pass filter for less TV interference . . . adjustable squelch . . . switchable or automatic noise limiter . . . tuning meter . . . and an external speaker jack! Shorten the distance, order yours today!

Kit MW-33, 19 lbs....no money down, $9 mo.....**$89.95**
Assembled MWW-33, 19 lbs....no money down, $15 mo.....**$159.95**

A Wide Array of Heathkit Transceivers To Choose From!

Versatile Selective Call Accessories $39.95 to $59.95

Low-Cost Single Channel Series $39.95 to $84.95



Handy Compact "Walkie Talkies" $19.95 to $74.95

"Fixed or Mobile" Transceivers $59.95 to $189.95

NEW! FREE 1964 HEATHKIT CATALOG

See the latest new and exciting products from Heathkit. Includes over 250 practical, easy-to-build Heathkits for Stereo/Hi-Fi, Amateur Radio, Test, Marine, Educational, and Home Entertainment. Save up to 50% on all equipment and have fun doing it! Send for your free copy, today!

HEATHKIT

HEATH COMPANY
• Benton Harbor 46, Michigan 49023

☐ Enclosed is $_____, plus postage. Please send Model No._____.
☐ Please send me my New, FREE 1964 Heathkit Catalog.

NAME_____
(please print)
ADDRESS_____
CITY_____ZONE_____STATE_____

and asking for an affirmative, apparently for the purpose of sending a QSL card. The Florida CB'er wanted to know if the Commission could cite him via a 'third-party' transmission, namely through the Indiana station's transmissions.

A CB'er in Ohio asked if the FCC makes it a point to watch for particular 'repeat-violators' once a citation has been issued. He noted that in four years he has received five citations for apparent violation of 19.61 (a), but that he did not make it even an **irregular** habit to work skip. He noted that stations all around his locale work skip whenever skip is 'in', and they **never** get cited.

Several CB'ers reported that the latest batch of FCC citation notices contain two lines impressed onto the citation forms with a red stamp. The red lettering reads (in effect) "Any further willful or repeated violations by this station will result in a fine." Many of the offenders cited were receiving their first citation.

Overall, while much of the discussion **did** center on Part 19 and the problems immediately before the CB'ers of America, this was by no means the limit of discussions held.

President Thacker outlined an ACBA organizational plan whereby state or regional ACBA Charter Membership Drive Managers would be established throughout the country. The Regional Drive Managers will be CB'ers who have expressed an interest in helping the ACBA reach the Charter Membership goal: 10,000 members. While all coordination of these activities will continue to come through the ACBA administrative offices in Oklahoma City, the actual affecting of the policies will be done at a locale or regional level. CB'ers interested in working with the ACBA as regional membership drive managers are requested to contact Kenn Bostick at ACBA headquarters, P.O. Box 405, Oklahoma City.

President Thacker also reported on programs already underway by the ACBA. ACBA shirts, window (auto or home) decals, and membership pins were shown at the convention. All will be available at an early date through the ACBA offices and all members will be notified by mail. All proceeds from the sale of these items will go into the ACBA treasury.

CB Club groups which joined in varying degrees (75% to 100% membership participation in the ACBA) at or just prior to the convention included the following clubs:

Tipton CB Club, Tipton, Oklahoma
Silver State CB Assoc., Reno, Nevada
Hall of Fame CB Club, Canton, Ohio
CB Rangers, Inc., Butler, Pennsylvania
Kyova CB Club, Kenova, W. Virginia
MCEU, Newton Falls, Ohio
CB Aires, St. Louis, Missouri
Tri-Community CB Club, Pendleton, Indiana

ACBA President Thacker and Membership Committee Chairman Tommy Mellons reported CB clubs had really begun to join in force. At least two state organizations averaging 1,500 members each were in the process of joining as a whole group, Mellons reported.

Business Manager Bostick noted that the 10,000 Charter Membership goal would certainly arrive much sooner with this kind of state-association support, and Thacker noted that indications now are there may be 10,000 Charter Members by early fall.

The ACBA meeting was adjourned with a renewed pledge to adopt the principles set forth in President Thacker's "Platform" appearing in the July issue of CB Horizons, and all members and delegates on hand urged a continuation of the 'top-level' meetings between the ACBA representatives and the FCC, as reported on in CB Horizons for August.

Ozzie

CB SALESMAN WANTED

Must have extensive product knowledge and contacts in Citizens Band field. To handle established, high quality product line. Location: metropolitan New York. Little travel. Excellent opportunity offering high salary.

BOX 15 — CB HORIZONS
P.O. Box 1557, Oklahoma City 1, Okla.

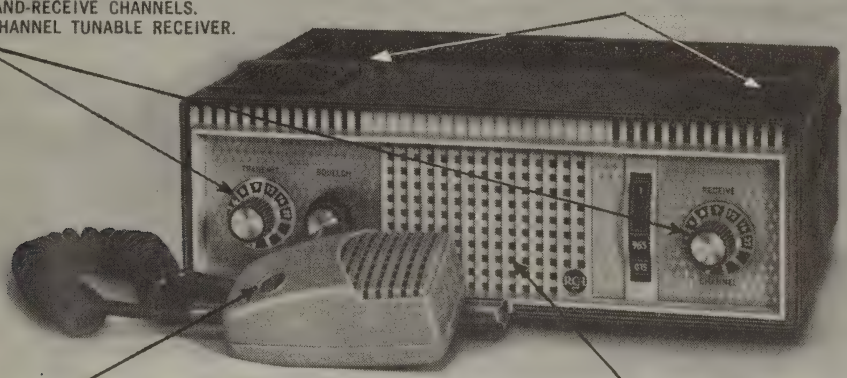
FEATURE FOR FEATURE — DOLLAR FOR DOLLAR
YOUR BEST BUY IN CB RADIO

THE NEW RCA
MARK VIII

27-Mc CITIZENS BAND 2-WAY RADIOPHONE

UP TO 9 FIXED, CRYSTAL-CONTROLLED TRANSMIT-AND-RECEIVE CHANNELS. PLUS ALL-CHANNEL TUNABLE RECEIVER.

CONVENIENT ACCESS TO CRYSTALS FOR QUICK CHANGING.



PUSH-TO-TALK CERAMIC MICROPHONE with coiled cord.

EXCELLENT VOICE REPRODUCTION—high intelligibility.

EXCELLENT TRANSMITTER MODULATION CHARACTERISTICS

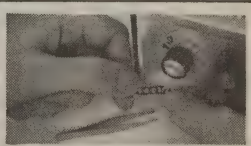
IMPROVED AUTOMATIC NOISE LIMITER reduces effects of ignition and similar interference.

COMPACT AND LIGHTWEIGHT 3½" high, 9 pounds. Fits easily under any auto dashboard.

Continuously tunable receiver picks up any of the 23 C-B channels. Tunes either by channel number or frequency.

Illuminated working channel. Pilot lamps behind the fixed-channel dials show the channels being worked.

Separate mobile power supply. (Optional) 6- or 12-volt, for car or boat. All units contain AC power supply.



Channel-marker kit. Select channels best for your area, then mark them with the self-adhering labels included.

ONLY $149.50*

*OPTIONAL LIST PRICE

Get all the Facts Before You Buy.
Mail Coupon Today. Paste on 4¢ Post-Card.

RCA ELECTRONIC COMPONENTS AND DEVICES
Commercial Engineering Dept. #I-131-R
415 South Fifth Street, Harrison, N. J.

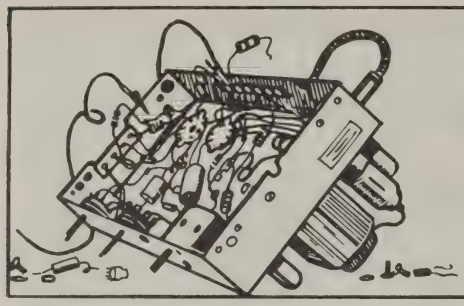
Please send more information on the RCA Mark VIII C-B Radiophone

Name_____

Address_____

City_____ Zone____ State_____

RCA® **The Most Trusted Name in Electronics**



TECH TIPS

FOR CB'ers

MAKINO S-METER CIRCUIT

Following the Makino Noise Limiter circuit in the July, 1962 issue of CBH, I found as did others that the S-meter reading was low. Following my natural impulse, I changed the AVC level hoping to bring the S-meter reading back in line with what the manufacturer, Lafayette, intended. It did, but then the unit was prone to overload and distortion from strong local signals.

So I set out to cure the problem for good. Here is what I did. The following changes in the HE-20 series, plus the recommended Makino changes, gives you a set with a far superior noise elimination system (I improved my base to mobile range from 5 miles to 20 miles), an S meter that works well, and a superior squelch circuit.

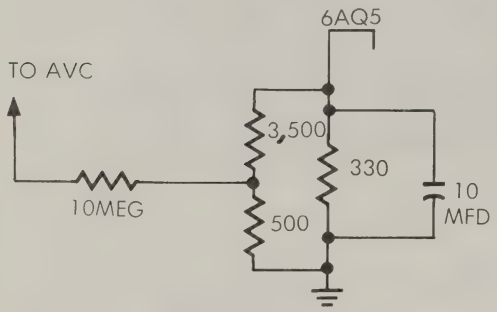
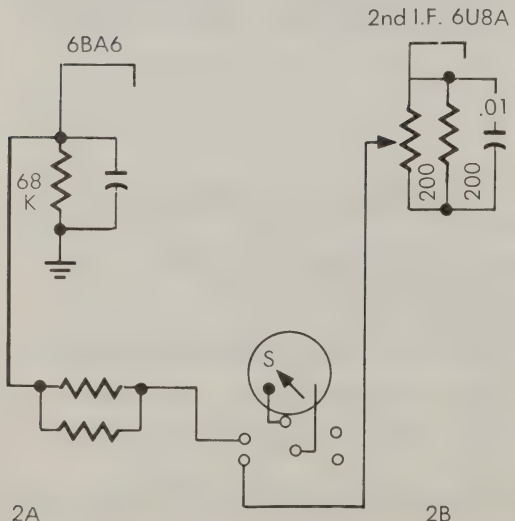


DIAGRAM ONE



2A 2B

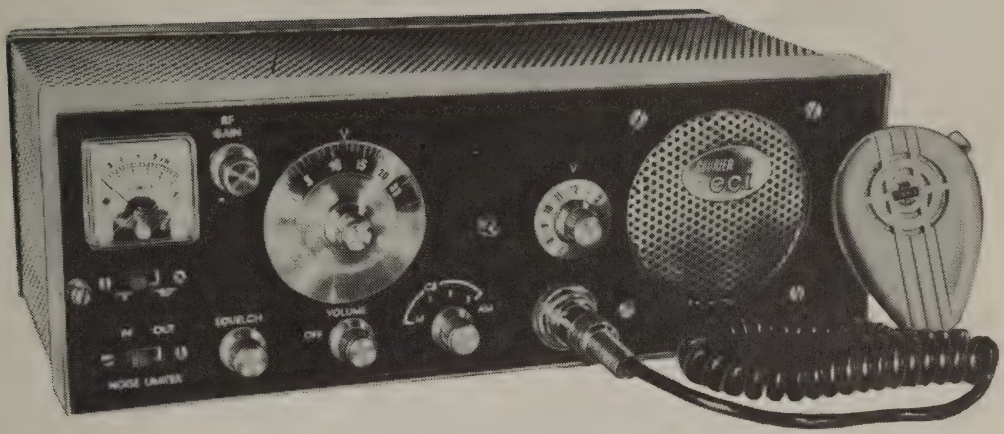
(1) The existing HE-20 sets have a 10 meg resistor that goes from the cathode of the 6AQ5 (pin 2) to the AVC line. Make a voltage divider, as shown in diagram 1, around the cathode resistor.

(2) Now parallel the 200 ohm pot on the 6U8A (2nd i.f.) with a 200 ohm resistor and parallel the 120 ohm S meter series resistor with another 120 ohm resistor, as shown in diagram 2A and 2B. You might want to vary the 120 ohm S meter paralleling resistor a little either side of 120 ohms to suit your own meter movement. This will have some affect on the upper scale of your meter. (3) The above changes will put your S meter back into proper operation, without overload problems. I also found that the squelch on the HE-20 series improves when you change the plate resistor of the 6T8 to 47K or 50K, and the coupling condenser to .01. Now take the squelch voltage divider off the 6U8 screen instead of from the 6BA6 i.f. screen.

Rev. Daniel F. Hentscher
18Q9372
Cross Plains, Indiana

REMINDER-LICENSE FEES

Effective January 1, 1964, all Class D CB Applications filed with the Commission must be accompanied by a check or money order for $8.00. The check is to be made out to the Treasurer of the United States.



COURIER 1-M

NOW!

QUIETEST

MOST POWERFUL

MOBILE

C.B. UNIT!

HEAR IT TO BELIEVE IT!

Write for Free Brochure ..... **$229.50,** list, slightly higher west of Rockies.

eci. **electronics communications, inc.** 325 no. macquesten pkwy, mt. vernon, n. y.

THE CB LISTENER

Awards and Certificates for CB DX

"The Voice of Sunshine"

'Hap' Perkins, 10Q2889, Dallas, Texas reports on hearing (several times) a station who says he is located in Santiago, Chile (South America) on channel 17. The South American CB'er reportedly speaks perfect English, but will not repeat his address over the air.

Hap wonders, as do we, if anyone has intercepted a transmission from this station, and, has an address on him?

His signal should be coming through again during August and September, in particular in the afternoon hours and on through sunset, if he is truly located in Chile.

REPORT FROM RADIO CORDAGE

Our monthly report from Ronald J. Black, licensee of "Radio Cordage", Jamaica, British West Indies includes skip reception from a number of stateside stations during the first weeks in May, CBL 'heard' cards from Radio Cordage have been mailed to each of these stations as of late in May.

Time EST	Station Heard	RSFM Report
May 7		
0946	KDH2305	5833
1030	10W2563	5833
1102	KDH2305	4533
1104	10Q2889	3332
May 8		
0852	KDH2305	5933
1055	KDH2305	5933
1151	KDH2292	3333
May 9		
1355	KDI0917	5833
1410	KDH2066	5933
May 17		
0900	KDH0771	5833
1550	YV5???	

Ronald notes that he believes he made contact with a station in Caracas, Venezuela at 1550 on the 17th of May, although the Spanish to English conversation was hard to get straight! I say he expects to get a card out of it.

Ronald is using the RSFM signal reporting method detailed on the inside front cover of the CB Logbook (from Horizons), and you should be able to see what an advantage it offers to CB type operations over the normal RS method that so many CB'ers have adopted from the amateurs.

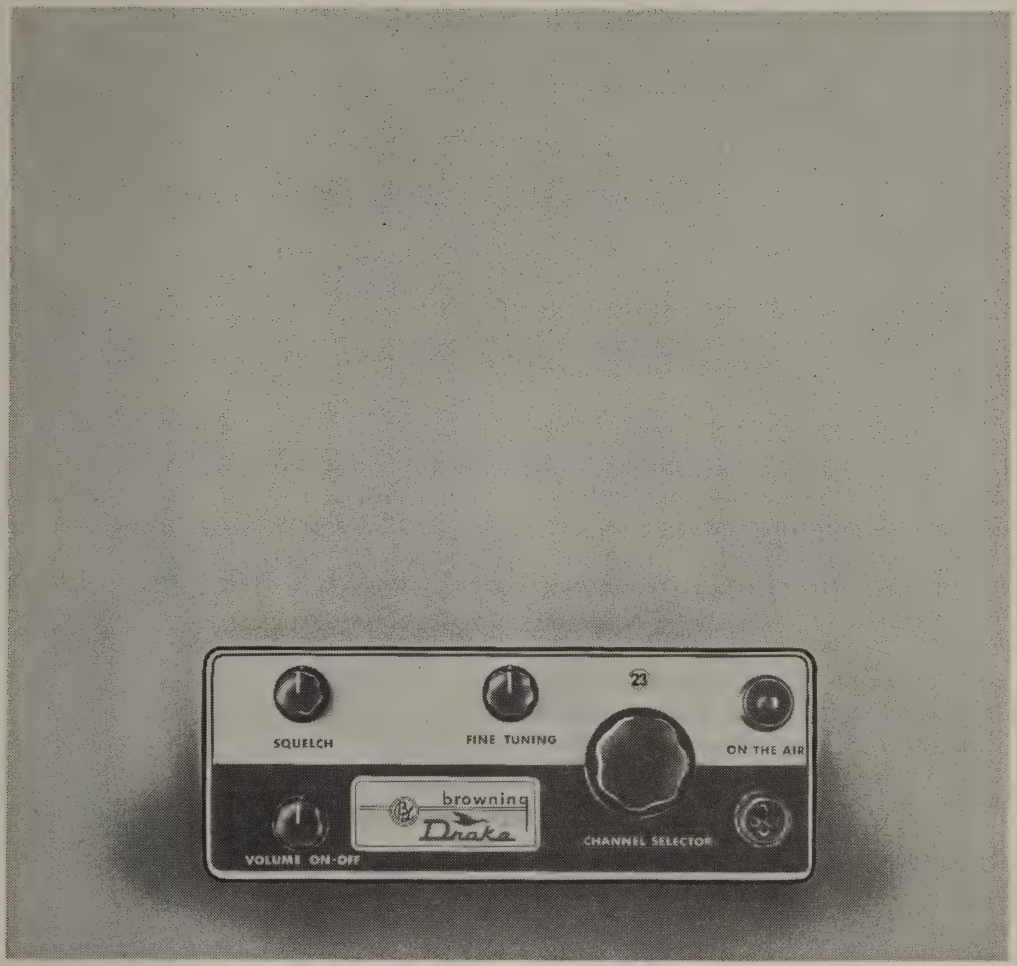
Radio Cordage continues to operate on CB channel 3 should you want to listen for the island of Jamaica when skip is 'in' from the Caribbean region.

NEW CB COUNTRIES ACTIVE

KEG3246, Herndon Howard in Dallas, reports on two additional new countries on CB. The most fascinating of the pair is VGH3697, located at Eleuthera in the Bahamas, off the coast of Florida.

VGH3697 is 'apparently' a licensed station of the Bahamian government, is operated by Jim, Cookie and Mike Kay, at Governors Harbour. The Bahamian station uses a Lafayette HE-20C, a ground plane, monitors channel 11 and transmits on channels 2, 5, 6, 7, 9, 11, 14 and 16. KEG3246 heard the station in May.

Several readers report Mexican stations as active, here is a definite 'fix' on one such operator.



Think smallest.

Planning to buy a mobile CB rig? Think smallest. Buy the smallest 23-channel mobile CB transceiver on the market . . . the Browning Drake M-523. It's so compact it fits perfectly under the dash, and you can still ride three in front comfortably. Perfect for sports cars. The Browning Drake M-523 and M-506 (six-channel version) are 8" x 9" x 3" small. What's more, we use only tubes in the circuits for utmost reliability — and you don't have to be an electronics engineer to make repairs or change a tube. Right now we have over 100 franchised Browning Service Centers across the nation where you can see, try (if you have a license) and buy the Drake or any other Browning CB equipment. We will gladly tell you where the nearest one is in your area. Before you buy just any mobile CB equipment, THINK SMALLEST . . . BUY BROWNING. Then start enjoying CB as it should be.

Mail Coupon Today

Browning Laboratories, Inc., Dept. H
100 Union Ave., Laconia, N.H.

WITHOUT OBLIGATION, PLEASE SEND:

- ☐ Name of nearest Service Center.
- ☐ 16-page color CB catalog.

NAME _____

ADDRESS _____

CITY _____ ZONE ___ STATE _____

CALL LETTERS _____

browning
LABORATORIES, INC.
LACONIA, NEW HAMPSHIRE

XB-3, Rafael L. Corcuera, P. Sanchez No. 146, Guadalajara, Jalisco, Mexico operates with a Lafayette HE-20C and ground plane antenna. He reported to KEG3246 that he has received cards from California, New York, and Canada as well as many points in between, 238 cards in all as of mid June.

BLANKET INTERCEPT PERMISSION

We have tabulated the "Blanket Intercept" permission forms returned to us up through the first week in May. A form for those who have not returned same is provided with this column.

It is imperative, if you wish to make your station available to receive heard reports in the form of CBL cards, that you return the attached form, **signed**, with your call letters, name and address.

For the time being we will continue to list those stations returning the Blanket Intercept form, as they come in. However it has been suggested that a directory to 'DX Listening Enthusiasts' be published, listing the channels used most frequently by these stations, as a **guide** to what channels to **listen** on when you are chasing CBL cards. We'd like to hear what you think of this suggestion.

All stations that have issued Blanket Intercepts would be contacted with a questionaire and from the returned questionaires, the directory would be prepared.

Note in this listing that stations are grouped according to their locations. This means that some stations who are operating outside of their call-prefixes will be listed with the area they are actually operating in or from.

All stations listed here have given written permission for any reader of the CB Listener column to send them heard reports without the entanglements of obtaining written permission, per our May issue of CB Horizons.

MASSACHUSETTS
KBA5557—Billwin
1W6651—Malden
KBA4717—Pinehurst
1Q3215—Reading
KBC1489—Rockland
KBC2135—Bridgewater
KBC2863—Rockland
KBC2079—Hanson
KBC0479—Pembroke
KBA3583—Uxbridge
1Q2289—Cohasset
KBA0854—Quincy
KBB0539—Quincy
1Q7226—Magnolia
KBA9163—Halifax
KBA5178—Quincy
KBA2226—Manchester
KBA1958—Pembroke
KBA5284—Quincy
1W7703—Whitman
KBC2097—N. Abington
KBA8586—Dorchester
1Q3000—E. Lynn
KBA8405—Princeton
KBC1206—Mattapoisett
KBC3865—Mattapoisett

CONNECTICUT
KBA8391—Poq. Bridge
KBC0368—Tuftville
KBC1830—Poq. Bridge
MAINE
1Q1057—Wells
NEW HAMPSHIRE
KBC1854—West Lebanon
KBA6902—Milford
KBA9357—Dover
RHODE ISLAND
KBC3918—Woonsocket
KBA3941—Woonsocket
KBC0361—Woonsocket
KBC1028—Woonsocket
KBB0230—Woonsocket
KBB0077—Woonsocket
KBA9143—Woonsocket
1Q6755—Woonsocket
1W1717—Bristol
1Q5419—Bristol
VERMONT
None
NEW JERSEY (2nd District)
KBG8500—Bloomfield
KBI1950—Rutherford
KBG9040—Ridgewood
KBI3430—Passaic
NEW YORK (2nd District)
KBG7687—Hudson
2W7361—East Islip
2W4836—East Islip
KBG2464—Islip Manor
KBI0854—New York City
PENNSYLVANIA (3rd District)
KCC0719—Lancaster
KCD1431—Lebanon
KCC1541—Quakertown
KCD0124—Quakertown
3Q2800—Villanova
NEW JERSEY (3rd District)
KCC0212—Vincentown
KCC4187—Hainesport
KCC0522—Vincentown
KCC1121—Vincentown
KCD1353—Vincentown
KCD1245—Vincentown
MARYLAND
KCF0889—Wheaton
DELAWARE
None
VIRGINIA
KCI2239—Suffolk
KCI2736—Suffolk
KCI5478—Suffolk
KCI3574—Suffolk
KCI2947—Suffolk
KCJ0367—Suffolk
KCI2491—Suffolk
KCI6047—Suffolk
KCI5452—Suffolk
KCI2264—Suffolk
5Q0563—Suffolk
5Q4139—Suffolk
KCI5991—Suffolk
5Q1264—Suffolk
5Q1179—Suffolk
KCI1030—Suffolk
KCJ3695—Richlands
KCI5425—Newport News
KCI2336—Newport News
KCI6908—Newport News
NORTH CAROLINA
KCJ3444—Statesville
KCJ1539—Statesville
KCJ2056—Statesville
KCJ2085—Statesville
KCJ2413—Statesville
KCJ2952—Statesville
KCJ3212—Statesville
KCJ3170—Statesville
KCJ1396—Winston Salem
KCI6619—Winston Salem
KCJ1324—Winston Salem
KCJ0735—Winston Salem
KCI3527—Winston Salem
KCJ1445—Southern Pines
KCJ1716—Linwood
KCI6713—Raleigh
KCI2441—Coralpeake
TENNESSEE
6Q0054—Byrdstown
KDD2003—Winchester
KDD3532—Winchester
KDI1327—(Tenn.)
KEH1584—(Tenn.)
KDD2263—Memphis
KDD2019—Nashville
ALABAMA
KDD2173—Huntsville
KDB5529—Decatur
GEORGIA
KDB1821—Waynesboro
KDB8726—Waynesboro
KDB4593—Augusta
KDB7758—Hartwell
KDB8020—Hartwell
KDD4800—Hartwell
KDD2486—Nicholson
SOUTH CAROLINA
KDD2506—Burton
KDD2161—(S.C.)
KDD2741—(S.C.)
KDD2098—(S.C.)
KDD2190—Bishopville
6Q3129—Walhalla
6Q2815—Walhalla
6Q5456—Walhalla
KDB3731—Walhalla
KDD2999—W. Union
6W2828—W. Union
6W6963—W. Union
KDD0376—Mt. Rest
KDB4481—Walhalla
6Q1756—Seneca
6Q1759—Seneca
KDB0281—Columbia
KDD1997—Dillon
KDD4565—Seneca
KDD4660—Seneca
FLORIDA
KDI0811—Gulf Breeze
8Q1362—Pensacola
8Q0111—Gulf Breeze
KDH0864—Gulf Breeze
KDH1632—Orlando
KDH1943—Orlando
LOUISIANA
KEB0461—(Louis.)
8W1387—Tunica
KEB1115—De Ridder
ALABAMA (8th District)
KEA0572—Bayou-La-Batre
KEA0974—Bayou-La-Batre
KEA1765—Bayou-La-Batre
KEB0432—Bayou-La-Batre
KEB0854—Bayou-La-Batre
KEA2835—Bayou-La-Batre
ARKANSAS
KEB1249—Magnolia
KEB1038—Magnolia
KEB0805—Magnolia
KEA2698—Magnolia
KEA1324—Waldo
TEXAS (9th District)
KEH1960—Lubbock
KEE0604—Houston
KEE0286—Beaumont
KEE0738—Houston
KED0775—New Braunfels
KEH0679—New Braunfels
9W2566—New Braunfels
TEXAS (10th District)
KEG3453—Carrollton
10Q2889—Dallas
KEG0660—Dallas
KDB8947—El Paso
KEG4216—El Paso
KEG5020—El Paso
KDH2128—El Paso
KFC2693—El Paso
KEG4062—El Paso
KEG5005—El Paso
KEG0125—El Paso
KEH0840—El Paso
OKLAHOMA
KEG0935—Bethany
KEG1027—Oklahoma City
KEG4716—Oklahoma City
KEH0383—Oklahoma City
ARIZONA
11W9388—Phoenix
5W0417—Fort Huachuca
KFA1006—Elgin
KFA2129—Fort Huachuca
KEJ7081—Sierra Vista
KEJ7356—Sierra Vista
KEJ5860—Huachuca City
KFA1339—Sierra Vista
11Q3637—Warren
11Q5220—Miracle Valley
KFA1059—Sierra Vista

Announcing

A Complete New Line of Citizens Band

ANTENNAS *by* TENNA

Write today for Free Catalog featuring Tenna's wide variety of quality base station and mobile antennas. High performance and rugged endurance engineered into each handsome model! There are brand new ground planes, beams, fiberglass whips, steel whips, top loads and a large selection of complete mounting hardware packages. Send for FREE information today!

MAIL COUPON TODAY!

TENNA Mfg. Co., Inc.
19201 Cranwood Parkway
Cleveland 28, Ohio

Gentlemen, rush FREE CATALOG today

Name .....

Address .....

City & State .....

THE TENNA
MANUFACTURING CO., INC.
Cleveland, Ohio

BLANKET INTERCEPT PERMISSION

The undersigned persons (and stations) hereby grant blanket permission to all Readers of the **CB Listener** column in CB Horizons magazine to intercept transmissions from my (our) station(s) and to report these intercepts to my (our) attention on proper CB QSL cards, mailed in sealed envelopes. We also grant permission to CB Horizons to list our names and call-letters in the **CB Listener.** This permission fulfills our authority to grant such permission as detailed under Section 605 of the Communications Act of 1934, amended.

Name	Call Letters	Location

What price Liberty?

The supreme price. The loss of liberty, and more important, the loss of the right to determine our own future.

BUSINESS RADIO USERS GROUP FORMING

Well, the die is cast for the last of the radio service licensee groups to have its own national organization.

Sometime after the first of the new year, a Washington group will announce the formation of a new nationwide association for Business Radio Service, Police and Fire Safety Service and the hundred and one other smaller services.

This new all encompassing group of radio service users will have their own magazine, will have an expensive Washington lobby, and will undoubtedly have the support of the Motorola's, General Electric's and other groups who sell and service equipment in this huger than CB field.

WHAT DOES THIS MEAN?

It means that we have a clear cut division of radio services under any one of four banners. In the extreme left (or right) hand corner we have the amateurs, and their ARRL. In the far opposite corner we have the CB users, and their newly emerging ACBA. In the middle we have the broadcasters and their National Association of Broadcasters (NAB).

And soon we will have all of the many other radio service users under a banner and name yet to be announced.

Lobbying for radio services is becoming big business. The broadcasters spend an unestimable amount yearly. Millions surely.

The amateurs are more sly about it; they get people like General Curtis LeMay, Herbert Hoover, Jr. (their League president), Arthur Godfrey and Senator Barry Goldwater to get into ham radio. And they spend a little bit now and then, too.

The new special and safety radio services group will probably become a very potent force. We know personally, and respect deeply, the gentleman behind the move. He'll do a bang up job for them. They'll

CONTINUED — Page 51

Terry 18W3516 Owner of Amateur Electronic Supply

says

Trade in Your Present CB Equipment on

HALLICRAFTERS CB TRANSCEIVERS

$5 DOWN

three years to pay

NEW HALLICRAFTERS CB-3A $159.95 ONLY $5.77

a month (3 years)

Look at these low payments on all Hallicrafters CB Equipment

		1 Yr.	2 Yr.	3 Yr.
CB-3A 8 Channel	$159.95	$14.65	$7.99	$5.77
CB-5 Transistorized	199.95	18.32	9.99	6.38
CB-4 Hand Held (Ch. 11)	89.95	8.24	----	----

ACCESSORIES

HA-9 S meter Kit for CB-3A	$ 8.95
HA-11 Noise limiter for CB-3A	$15.95

AMATEUR ELECTRONIC SUPPLY

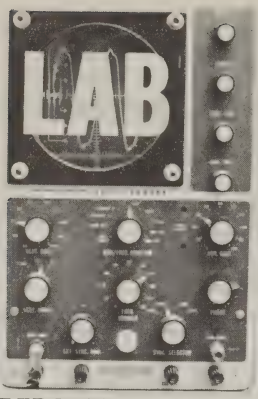
Complete Stock of Hallicrafters CB Equipment and accessories as well as S-wave Receivers and Ham Equipment.

To: Amateur Electronic Supply
3832 W. Lisbon Ave., Milwaukee 8, Wisconsin

Ship me a ____ on channel ____ (1 Free).
Please install Extra Channels for ____ ($5.95 per channel).
I Enclose $____. I will pay balance (if any)
in: ☐ C.O.D. ☐ 1 Year ☐ 2 Years ☐ 3 Years
For: ☐ 110 VAC & 12 VDC ☐ 110 VAC & 6 VDC

I want to buy a ____ and want to trade
a ____ which was originally purchased in:
☐ Kit Form ☐ Wired
In this form this unit originally sold new for
$____. I purchased it ☐ New ☐ Used.

Name ____ Call ____
Address ____
City ____ Zone ____ State ____
☐ Send FREE listing of used CB & Ham gear.



REPORTS

OF PRODUCTS TESTED BY OUR ENGINEERS

FULL LAB REPORT— ECI COURIER 1M

The ECI Courier 1M is a much up-dated version of the popular Courier transceiver introduced by ECI — Electronics Communications, Inc., 325 North Macquesten Parkway, Mount Vernon, New York, more than two years ago. The basic functions of the 1M are little changed from the original Courier. The performance, i.e. the equipment under the hood is changed, and we feel improved considerably.

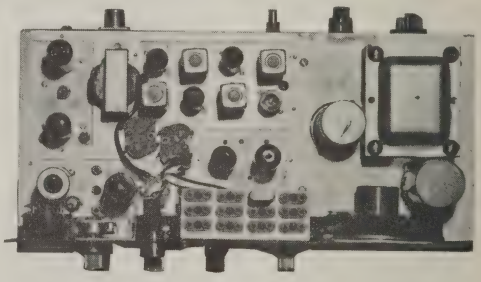
The 1M has 12 channels on transmit, a 23 channel tuneable receive plus four fixed-tuned positions. The most unusual feature found in this section of the set is the unique non-crystal controlled fixed-tuned channels. In the four fixed-tuned channel selections, the user has a capacitor-coil combination that can be resonated (tuned) to any one of the 23 channels. In other words, you set the fixed tuned channels you desire by adjusting a capacitor. If you want to change one or more, its as simple as zeroing in on the new channel with an alignment tool (insulated screwdriver).

The 12BH7 oscillator-buffer uses NPO capacitors wherever frequency stability due to thermal (heat or cold) variations might be a problem. This contributes to long term as well as short term transmitter stability.

The 6EM5 transmitter output tube loafs along at 5 watts input the output circuitry features tuned-link coupling, a television interference second harmonic trap and a IN34A diode that indicates relative RF output on the combination S and RF meter.

The receiver section employs a number of unusual features in addition to the fixed-tuned four receive channel positions. The receiver front-end is a tube, but no ordinary tube. ECI employs an Amperex EF183/-6EH7, which is one of the new frame-grid super-tubes, similar in design to the 7788 extra-low noise pre-ampifier described by CB Horizons in the October, 1962 issue.

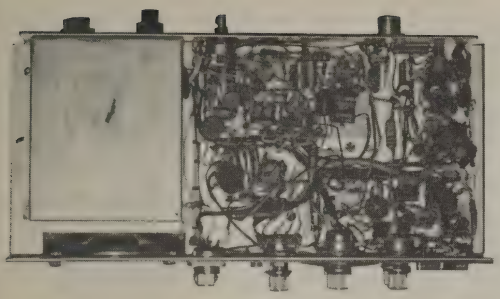
ECI also approaches the signal conversion problem (i.e. converting the 27 megacyle signal down to a frequency low enough to provide receive selectivity, and finally establishing audio) in a manner worthy of description. The first conversion is through a 6CW4 Nuvistor and this is in turn followed by a conversion stage utilizing the pentode portion of a 6U8/6EA8. The third



(and last-triple) conversion is done in a 6BE6, which produces an i.f. frequency of 262 kc.

The unusual twist, aside from the triple conversion and the Nuvistor first conversion stage, is the fact that except for a tuned circuit between the 6U8/6EA8 and the 6BE6, there is no i.f. amplification or tuned circuits until after the signal reaches 262 kc. Here a single 6BA6 amplifies the signal prior to detection in the 6AL5.

This results in quite low-level conversion signals, although the signal to noise ratio



doesn't seem to suffer. With the relatively high gain frame grid 6EH7 in the front end of the receiver, apparently ECI feels that they generate sufficent signal level and signal to noise ratio to withstand the conversion loss of three rapid-fire stages of conversion, with nary a stage of i.f. amplification between them.

The fixed-tuned channels are accomplished in the first-grid circuit of the 6BE6 third conversion stage. By loading down the first grid with varying amounts of capacity, and rotating the capacity in the circuit through a four position switch, the user selects his fixed-tuned channel.

The power supply supplied with the 1M is a conventional vibrator supply. However ECI has recently announced a transistorized accessory supply (model TPS) which allows the user to switch to a more reliable (and quieter) power developing circuit.

The entire design of the Courier 1M is along modular lines. This means that the complete unit is actually assembled on 5 separate sub-chassis sections, with cabling between the sections tieing everything together when it is bolted together in the chromed cabinet.

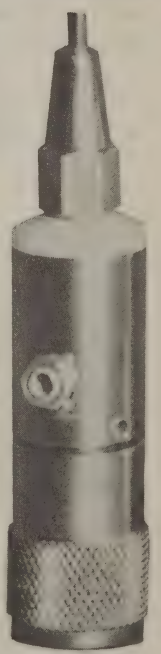
The 1M is featured as a mobile-deluxe transceiver, but there is nothing to stop it from being an equally well performing base station.

Editor's note: Readers wishing a photocopy of the complete engineering report of this product may obtain same by sending a self-addressed envelope with 50 cents in coin or check (no stamps please) to ECI Lab Report, P. O. Box 1557, Oklahoma City 1, Oklahoma.

THIS SYMBOL BOS REPRESENTS

THE FIRST HONEST TO GOODNESS RANGE IMPROVEMENT IN CB MOBILE COVERAGE

It's the electrical symbol for the Toroid Transformer, featured exclusively in the NEW TOROID-TENNA



Toroid-Tenna is the outgrowth of several years experience in exacting U.S. missile and satellite antenna projects, under the direction of Electro-Winders Co., Inc.
The **Toroid-Tenna** is a shortened whip (42") loaded at the base with the exclusive toroid transformer. **Only** the "toroid" short whip loading method produces a VSWR so nearly perfect (1 to 1)!
Toroid-Tenna has the **lowest noise pick-up** from surrounding noise sources (Ignition, power line, neon signs) that we have ever measured! This is mobile range-gain for you because weak signals previously covered by noise are now readable—thanks to the unique toroid transformer!
Toroid-Tenna is tuned with a screwdriver adjustment in the completely shielded chrome plated base. You do not cut or trim this antenna for exact match. A **perfect** match between transmission line and antenna is guaranteed!
Toroid-Tenna's base is fitted with an element-proof PL-259 connector for quick screw-on attachment. A specially fabricated, chrome-plated universal mount is available for trunk, gutter or roof use at just $5.95
You owe yourself this extra measure of CB mobile coverage available only from Toroid-Tenna. Order one today and learn the truth for yourself!

Actual Size
19.95

ELECTRO-WINDERS CO., INC.
PR Antenna Systems Division
854 West Front St., Covina, California
Enclosed is my check (money order) for $19.95 for a **Toroid-Tenna.** (Add $5.95 for Universal mount.)

Name _____

Address _____

City & State _____
(In California, add 4% sales tax)

DATELINE - "CB INDUSTRY"

NEW PRODUCTS, SERVICES FOR 2-WAY RADIO

FREQUENCY STANDARD FROM ELTEC

Eltec Laboratories, Inc., 30 Alsop Avenue, Middletown, Connecticut has announced a new 0.0002% frequency measurement meter that covers the range 25 mcs to 54 mcs, thereby covering the 27 mcs CB band.

The Model 600 with .0002% accuracy exceeds FCC Type D equipment requirements by five times. This enables CB service shops to make quick and accurate determination of transmit and receive channel crystals, making sure that they fall well within .005% tolerances and are on frequency.

Model 600 is priced at $349.95. The unit can be checked against National Bureau of Standards frequency station WWV.

Optional units available include an audio amplifier for remote operation, at $29.95, and a built-in tone oscillator for 5 kc F.M. deviation measurements, at $49.95.

The meter will be a boon to the small CB service shops thinking of entering the CB frequency measurements and crystal checks end of the business.

Lafayette Radio Electronics, 111 Jericho Turnpike, Syossett, L.I., New York has a pair of new units for the CB buff.

The HE-100L is a 12 transistor hand held unit featuring separate microphone and speaker, and variable squelch. Its 12 transistor circuit is crystal controlled for both receive and transmit functions. Receiver sensitivity is better than 1 microvolt for 10 db signal-to-noise ratio. Power is supplied by 8 penlight batteries. To conserve battery power, a 117 VAC power pack is available as an optional plug-in accessory. A 44 inch telescoping antenna, batteries, and crystals for channel 10 come with the unit.

Price is $39.95 each or $78.88 for a pair. Power is 100 milliwatts, Part 15.

The second new unit from Lafayette is their entry into the tone-calling world. Called the "Priva-Com," their selective caller is priced at $32.50 each or two for $62.50.

When a tone-activated signal is heard by the 'Priva-Com' adapted receiver, a tone sounds and the signal light goes on. Your squelched receiver is automatically activated and you can speak or listen to the calling station. Each 'Priva-Com' unit can

transmit six different combinations of dual tone frequencies. The front panel has a lever switch with standby, normal and call positions. Each comes complete with bracket for mounting to transceiver plus detailed instructions for wiring 'Priva-Com' to Lafayette HE-20, HE-90, HE-15 or to other push-to-talk sets.

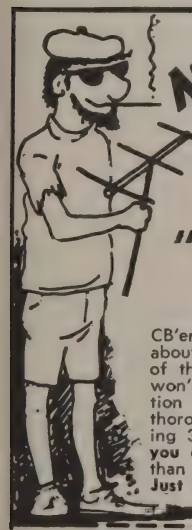
CORRECTION

"Tele-Mate 500"

The August issue of CB Horizons (Directory issue) carried a listing on page 50 for the TC-11 transistorized 5 channel CB unit. The price was inadvertently listed incorrectly. The radio, with recent improvements is now called the "Tele-Mate 500." The price is **$189.50.** For full information, and the name of your nearest "Tele-Mate 500" dealer, contact:

J. BRISKIN, INC.

14827 Ventura Blvd., Sherman Oaks, Calif.



NOW! ONLY $49.95

"Big Daddy" Slashes the Price of the "Big-Daddy-Three" CB Beam!

CB'ers from coast-to-coast are enthusiastic about the greatest CB gain-beam antenna of them all, the **"Big-Daddy-Three."** You won't be satisfied with your CB installation until you have one. Hand-crafted, thoroughly field-tested; the best performing 3 element beam on the market. Now **you** can have the very best for no more than the price of a mass-produced beam. **Just $49.95!**

BIG-DADDY, 7W0464

P.O. Box 5448 — Tampa, Florida

- ☐ Please send me free literature on the finest CB beam of all!
- ☐ Enclosed my check for $49.95, payment in full for the Big-Daddy-Three.
- ☐ Send me dealer-franchise information.

Name .....

Address .....

City & State .....

Ideal for Business and Casual Citizens Band communications . . . both!

"412" webster band-spanner.

New Band-spanner C-B radio gives you the proper combination of new features needed for a double-barrelled positive performance!

Starts off with . . .

5 crystal controlled channels for Business use . . .

Adds a big plus . . .

Instant channel change from the front panel merely by plugging in proper quartz crystals . . .

Adds another plus . . .

Pre-wired for selective tone calling . . . just plug standard tone unit in rear receptacle provided.

Includes . . .

- A hot 0.2 uv dual conversion superhet.
- Wide level AVC control, ±6 db, 5-100K uv.
- Adjustable squelch responds to 0.1 uv sigs.
- Audio output, 3.5 watts.
- Very high image rejection—90 db or more.
- Spurious response better than 60 db.
- 8 tubes, 2-dual purpose, plus rectifier.
- Full 5W max. input to PA—power output of 2.7W—modulation to 95%.
- Panel instrument gives relative "S" readings—power output, modulation.

webster band-spanner.

317 Roebling Road,
South San Francisco, Calif.

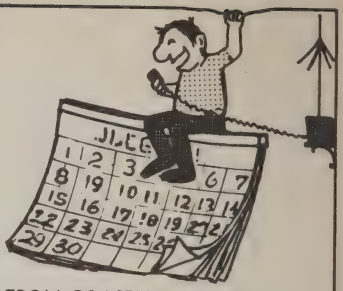
Please send information on "412" and full line catalog.

Name_____

Number Street

City Zone State

CITIZENS BAND DATEBOOK



A SERIES OF IN DEPTH REPORTS ON CB'ERS ACTIVITIES FROM COAST TO COAST.

CB HELPS PLANT TREES

by
(Miss) Mickey Cooper
Citizens Band Radio Relay League, Inc.
Lehigh Valley Chapter
Bethleham, Pennsylvania

We the Bethleham, Pennsylvania Director of Public Works, Ray Snyder, announced that his city would spend three weedends planting seedlings to cover an area blackened by forest fire, the Lehigh Valley Chapter of the Citizens Band Radio Relay League turned out in force to provide communications.

In May, **Operation Greenfoot** sought to replace approximately 500,000 evergreens destroyed in an April fire. The community citizens who made their way to the wild creek watershed area some 20 miles north of Bethleham. Planing sessions were conducted in two groups each, on three consecutive weekends, in May. At the end of the third session, approximately ½ of the 500,000 seedling evergreens had been rooted in mother earth.

Lehigh Valley CB'ers, utilizing hand-held units deep in the watershed area, far away from commercial power and roads, maintained constant communications with mobile units placed at strategic locations, who in turn maintained contact with Central Control. The radios were utilized to relay information vital to the operation, including messages pertaining to planting practices, dwindling supplies of the seedlings, and back-up emergency communications when the occasional cut foot or hand occured.

Public Works Director Ray Snyder publically credited the Lehigh Valley CB'ers for the fine job they did to keep the project moving. He told the press "If it hadn't been for those volunteers with theirs radios, the job would have been twice as tiring and only partly as effective."

Mickey Cooper

COVER STORY CONTEST

Here is an opportunity for your CB Club Group to work together to gain national publicity in CB Horizons.

CB Horizons magazine will award a free subscription (or extension-subscription) to CBH, a set of Call-Books (two per year) and a CB Log Book to **each and every** member of your club, IF your club submits a written report (250 to 1,500 words) with suitable photographic support on a newsworthy club project; and, IF your club's story is chosen as the best of the month by CB Horizons editors.

We'll warn you right now . . . our judges are going to be tough. 4 x 5 or larger color photographs showing your club in action will greatly **enhance** the chances of your club to win. We are in the market for good full color covers for CBH and chances are good many of our covers in coming months will be in connection with this contest.

Mechanics of submitting articles are as follows: Type double spaced copy 40 characters and/or spaces per line. Type on one side of paper only. Submit a carbon copy of the story with the original copy.

Mount all photographs between two pieces of lightweight cardboard. Send all stories by registered mail, enclosing the photos and stories in a single package.

Be sure to enclose a covering letter noting who the story came from, who the contact person is, with address and telephone number.

WIN! FREE CB EQUIPMENT IN

General RADIOTELEPHONE COMPANY'S MONTHLY DRAWING!

This month *General* is giving away a Model 615 SWR Bridge.

NO BOX TOPS! NO MONEY! NO CONTESTS!

DRAWING RULES: Enter by simply filling out the self-addressed post card below, and mail it to us before September 10th. The winner's name will be drawn, notified by mail, and announced on the inside front cover in General's November ad.

Drawing void in any locality or State where prohibited by law. Federal, State and Local Government regulations apply.

Prize winner will be selected in a random drawing conducted by Stanley R. Rader, Certified Public Accountant. Its decision, with respect to all phases of the drawing, will be final.

Entries limited to residents 18 years of age and older, of the United States and Puerto Rico. Employees and their families, of General Radiotelephone, General Dealers, Stanley R. Rader, Certified Public Accountant, and General Radiotelephone Company's Advertising Agency are not eligible.

★ ★ ★ ★ ★

Available now...

FREE!

General Radiotelephone's 1963 catalog: complete specifications, technical data and schematics on the Nation's most wanted CB and FM two-way Communications equipment. Fill in and mail the card below.

GOOD FOR SEPTEMBER DRAWING ONLY

GENERAL RADIOTELEPHONE COMPANY
3501 West Burbank Boulevard
Burbank, California

☐ Please rush FREE the General 1963 Catalog.

☐ Enter my card in the CB Drawing!

NAME _____

CB CALL _____

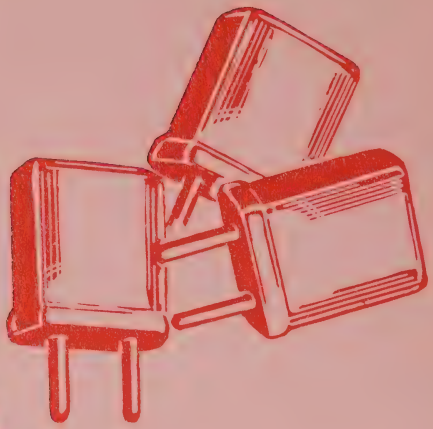
ADDRESS _____

CITY _____ STATE _____

NAME OF YOUR LOCAL CB DEALER _____

DEALER'S ADDRESS _____

CITY _____ STATE _____



NOW! .003% tolerance crystals at no increase in price. One year warranty. All channels in stock for most makes of C.B. units. Net $2.95 each.

See your General Dealer or write General Radiotelephone. State make and model.

PLACE
4c STAMP
HERE

GENERAL RADIOTELEPHONE COMPANY

3501 W. BURBANK BLVD., BURBANK, CALIFORNIA

few letters from well meaning people who've said (in effect) "If Walker, who isn't a licensed CB'er, is running this show, count me out."

We agree. Ernie shouldn't be running the show. And he is not. Contrary to S-9. Ernie has been traveling around the country speaking. And speaking only. He tells clubs he visits (he was in Pennsylvania, Ohio, West Virginia, Florida and Tennessee recently) that if we are going to have a CRS in the future, we'd better get banded together today: Forget our petty grievances and pull together as a national group.

And he's right. He's paying for most of this traveling out of his own pocket, feels that he is some sort of cause celebre and has offered his services to the ACBA hoping that enough people will want to hear what he has to say to make them come to a meeting where he is appearing.

And he hopes, for the ACBA's future health, they join-up while he's there.

Does he run the ACBA. No. He has just as much vote and weight as the other 6,000 odd members now enrolled. His vote counts one. The ACBA is a democratic organization from the word go; if it wasn't CB Horizons wouldn't touch it with a ten foot fiberglas whip.

Do we recommend it? That's like asking Henry Ford if he recommends the Fairlane. If we want to be around a year, two years or ten years from now, we'd all better recommend it. It's just that simple.

KEG2607

- 12 CHANNELS CRYSTAL CONTROLLED
- DUAL POWER
- 0.3μv SENSITIVITY
- 30db SELECTIVITY

SUGGESTED LIST $149.50

Designed for top performance and rugged reliability

HALLMARK 512 CB TRANSCEIVER

See your dealer or write for name of your nearest dealer to:

HALLMARK INSTRUMENTS, INC.
6612 Denton Drive • Dallas 35, Texas

NEW!
OFFICIAL DESIGN

ACBA DECALS

CB'ers! Get Colorful ACBA Window Decals. Dress up Your Mobile Units or use at Base Station!

3" High-Yellow & Blk.

$1.00 PER SET OF TWO Postpaid

Support your ACBA. Order Now!

CB SUPPLY CO. P. O. Box 111 Village, Okla.

Enclosed $_____. Please Rush _____ sets of ACBA Decals

Name _____

Address _____

City & State _____

FIRST DISTRICT–KBA/D

The Channel Wanderers of Rhode Island have undertaken a project of equipping a CB mobile trailer. This trailer will be available to any community in the Warwick area on a moment's notice. The club aso plans a training program for emergency CB traffic handling for its members, coordination with local and state police and regular monitoring of several channels for emergency and courtesy calls. Tony Lombari, KBA6015, is president of this club. Ken Smith, 18A9462, visited a Channel Wanderers meeting when he was in that area on military training. It was of interest to all to compare CB notes with Ken who is from Indiana.

Leo Bourque will be in charge of the card exchange booth at the State of Maine jamboree in Biddeford, August 14.

A new, but fast growing Massachusetts club is the 11–33 Radio Association, comprised of CB'ers in the Dorchester, Quincy and Braintree area. Ed Moore, KBE0359, a member, had an interesting experience when he picked up a call for help from a mobile on the Southeast Expressway. The motorist's eyes were filled with glass from his bullet-shattered windshield. Ed directed State Police to the scene of the accident; they rushed the victim to the hospital where it was reported his eyesight was not impaired. Cause of the shooting was unknown.

SNECRA's new president is Tom Thompson, 1W6199, of Wrentham, Mass. This club's outing was held at the Hamilton Rod & Gun Club in Sturbridge. Raffle prize was a Browning R2700A/23S9.

SECOND DISTRICT–KBG/H

CB'ers in the White Plains, N.Y. area who are seriously interested in increasing their knowledge of radio–electronics are advised of openings in the **10–40RC** in September. The club, headed by 205672, will hold one general meeting and three workshops per month.

Westchester CD, KBG4558 – K2AVP, brought along its well equipped radio van to an airport shelter demonstration. The newest feature of the an is a portable tower. Among those present were 2W9379, 2A3905, and 2W5626.

KBA0524 informs us that border station 1W3438 is no longer in the "rumrunner" business. Emil's serices, described in May '62 CBH, included a marine unit to carry liquor from his package store to thirsty CB'ers on the water. The new management is just landlubber BCL's. Prohibition comes to Long Island Sound. . . .

Several stations aided in rushing a nun to the hospital after she suffered an eye injury at a picnic. We hear 2Q4864 and KBC4157, among others, helped out via CB.

The Queens Chapter of CBRRL meets at 8:00 scond Fridays at 68–52 Fresh Pond Rd. (corner of Catalpa Ave., Queens). They have a beer and pizza party after each meeting.

Bethpage Park, Long Island, was site of outing for Kings County Chapter of CBRRL. This group meets at 2265 65 St. in Brooklyn on first Thursdays at 8:00.

Tri–County Citizen Band Relay Assn. was organized last December, present membership is over 44. For CB'ers in Bergen County, N.J. area, this club meets third Wednesdays at Maywood's American Legion Post 142, where the gavel is wielded by Mrs. Marie Kuhles.

Lillian D. Boos, 2Q5500, president of the Capital District CB'ers reports this club successfully completed their first big communications job in the Hudson River Marathon from Albany to New York. Gil Randall, 2W4027, and Harry Oathout, KBG7918, worked long hours in preparation for the big event. They report tremendous cooperation from everyone — especially the Electric City Club of Schenectady.

The Union County Citizens Radio Emergency Corps provided communications and traffic control for the American Legion convention parade. This was under the direction of Police Officer Robert Foster, KBG7343, also a member of the corps. The following day, the UCCREC's hard working members made the scene at the annual Soap Box Derby. Bob Hoolka, 2Q3965, was coordinator at this event. For the second time, the UCCREC provided communications during the annual Union, New Jersey Independence Day celebration.

Attention publicity chairmen! Check our CCM listing on page 8 for the names and addresses of reporters for this district.

THIRD DISTRICT–KCC/KCD

Qui–Co CB Radio League of Pennsylvania participated in fund rising drive to buy athletic equipment for a local children's home. This club organized a caravan to the Philadelphia zoo; and to the 8 State Jamboree sponsored by the York CB'ers; more trips are planned for the future.

Welcome Ronald E. Sellers, KCC3373, our new reporter for this district. Ron belongs to the York Citizens Band Assistance Club.

FIFTH DISTRICT–KCI/J

The **Helping Hand** CB'ers of Kinston, N.C. had the opportunity to serve their community when a large area of Lenoir County was threatened by forest fire. Though the fire conflicted with the club's scheduled dinner meeitng, the members were where they were most needed: directing traffic; manning hoses and shovels; and most importantly providing a communications link between firefighting units. Officials praised these CB'ers who offered, as always, their "helping hand". Club president Fred Dawson, 5Q1856, also thanked members for their time and effort. This club provided mobile collection of donations during a local March of Dimes. Because they live in a region frequently subjected to hurricanes, each member is well acquainted with the potential which CB radio has in emergency situations. A fish stew and dance was sponsored by this club in celebration of the Fourth. If you happen to be around Kinston on the first Thursday of a month, give a shout on Channel 11 and someone will tell you where the meeting is being held at 7:30 p.m. Visitors are always welcome!

Carolina Citizens Band Federation was organized to provide unified representation for their membership composed of licensed individuals, businesses, clubs, or networks in North and South Carolina. Members met for the first time at their June rally at White Lake, N.C. Ted Fox, KCJ0281, of Elizabethtown, presided over the meeting of 400 CB'ers who elected these officers for the coming year: Paul Oxendine, Clinton, N.C.; Bob Keelyn, Cherry Grove Beach, S.C.; Yates Warlick, Lawndale, N.C.;

Curtis Carter, Myrtle Beach, S.C. and Burndine Bell, Elizabethtown, N.C. Further information may be obtained from Federation headquarters by writing Box 778 Elizabethtown, N.C.

'The Tri-County See-Bee Views', published twice a month by the Tri-County CB Club in Rocky Mount, N.C. is one of the best club papers seen in this area to date. Edited by Jimmy Capps, KCI-3009, 'The Views' features profiles of members, comments on FCC regulations, and news of interest about and for members.

An odd combination of the old and new was seen at Fort Lee, Va. when CB'ers from all over the country were participating in the various pistol, musket, and cannon competitions held by the North-South Skirmish Association. Many Skirmish participants, dressed in their authentic Civil War uniforms could be spotted in the parking lot conersing on their citizens band radios. A Confederate officer talking on his walkie-talkie became a familiar sight before the competition ended. Local CB'ers in the Petersburg and Hopewell areas were most kind in offering directions to visitors.

Congratulations are in order to the CB 5 Watters of Virginia on their successful jamboree at Newport News. All mobile units were tested for SWR, field strength, and modulation by a licensed technician. Thanks to club secretary Ed Brooks, KCI-0192, for reporting the event. Frank Foster, 5Q3454, is president.

SIXTH DISTRICT—KDB/C

The **Confederate CB** club of Troy, Alabama, has grown from 7 charter members in December 1959 to present membership of 35. Their subsidiary, Pike County Rescue Unit was organized in January 1962 with each member becoming a working part of the unit. Thanks to American Red Cross training, 30 of the club members hold advanced First Aid certificates and 2 have instructors certificates. Ten members have a certificate in Radiological Monitoring, a course given by the Alabama Civil Defense. The Rescue units first project was, and continues, to help the Alabama Conservation Dept. in reporting and fighting forest fires. This southeastern Alabama club purchased a Vanette for which they will acquire radio and rescue equipment. The club is a member of REACT; presently monitoring 12 during the day, 9 at night. They plan to begin monitoring 9 around the clock and will use this channel for emergency only. Their fine record of community service includes aid in locating 7 missing persons; helping law enforcement officers hunt escaped prisoners; working the United Appeal Drive; locating a plane crash directing traffic at accident scenes, for parades, and during an electrical failure downtown. Club officers are Bob Newman, KDB1680; Herman Gunter, 6Q6727; Jimmy Roling, 6Q5045; Harvey Bullard, KDB8327; Ray Adams, 6Q4524; Robert Jones, KDB3540; Gerald Dunn, KDB3575. The club meets first and third Thursday nights at the Branding Iron Cafe, U.S. 231 South.

SEVENTH DISTRICT—KDH/1

CB'ers of the oldest city in the U.S. (St. Augustine) have banded together to form the newest CB club in the State of Florida! Known as the Citizens Radio Emergency Workers, this group elected Leroy Barry, 7Q1702, their president. Vice president is Carlos Harnage, 7W3639-U5 and Tony Brown, KDH1379, who is secretary-treasurer, will double as public relations director. Good luck, you all!

The Manasota CB Club, serving Manatee and Sarasota counties, meets first Fridays, 8:00 p.m., at the Florida Power Co. in Sarasota. At a recent potluck supper, this club welcomed visiting CB'ers from St. Petersburg. Evening's highlight was drawing for a CB radio—Chet Armstrong, 7Q0506, held the lucky ticket. Thanks to Walt Hist, KDH1836, editor of the Manasota 'CB Modulator' for the news.

In Jacksonville, the Citizens Radio Organization have reorganized their club and installed new officers to carry out the activities of the club, according to "Tex" Bonham, 7Q1401, vice president.

A full day of fun at Burt's Park was enjoyed by many members of DELRAD, Inc. This club in Deland, Fla. plans to establish an interclub communications network for Daytona and Orlando.

As reported in June CBH, there's a new club in the Orlando area — Citizens Band Business Assn. Their slate of officers: Chuck Griggs, KDH0606; Earl Galloway, KDH3051; Lindy Paterson, 7Q1949;

THE NEW MULTI-ELMAC CD5A CITI-FONE

INCORPORATES ALL OUTSTANDING FEATURES OF PREVIOUS MODELS

PLUS-

★ A new "noise-immune," steep action squelch operates at .1 microvolt of carrier signal above noise level.

★ A new voltage doubler power supply with 40% higher voltage.

★ A new microphone pre-amplifier for greater talk power.

★ A new modulator/audio-output circuit designed around the type 6GW8 tube.

★ A tone alert connector for accessory.

★ New, functional and attractive front panel styling.

THESE PLUS FEATURES add up to increased operating pleasure with a Citizens Band transceiver engineered for greater RF output, increased modulation and superior receiving ability.

$139.50

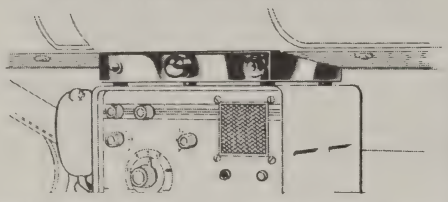
YOUR ASSURANCE OF RELIABILITY

MULTI-ELMAC COMPANY

21470 COOLIDGE HWY. OAK PARK 37, MICH.

RIG-LOC PAT. PEND

UNIVERSAL MOUNTING RACK FOR CB MOBILE EQUIPMENT



Rig-Loc locks in place . . . discourages theft. Stylish chrome-plated unit installs quickly and easily. Enables you to quickly remove set for repair . . . or transfer to base station or another mobile. Price has been reduced from $12.95 to just $8.95.

FITS ANY SIZE CB RIG!

Specify Model No. or send dimensions of set when ordering. ORDERS SHIPPED SAME DAY RECEIVED!

Model A — For Sonar, Poly-Com, Eico, General, Browning, etc.
Model B — Fits Courier, T&C, RCA, Hallicrafters, Tram, etc.
Model C — Fits Johnson, Gonset, Eico and others.

NOW ONLY $8.95

Send Check or M.O. to:

Roberts Communications Equipment

8503 Tilden Ave., Panorama City, Calif.

IF YOU SELL, SERVICE OR GIVE ORDERS, YOU NEED

SONAR BUSINESS 2 WAY RADIO...

A complete power-packed dependable performer!

Amplitude Modulated

Quality designed and engineered for years of service and dependability • Compact and lightweight • Easily installed in smallest vehicles • Smartly styled for office use • Greater range because of Voice-Power designed circuitry • Unexcelled reception • Noise-free squelch • Heavy-gauge aluminum construction • Easily serviced • Wired for instant use of the "Sonar-Call" selective calling system • Wired for Sonar High Power Linear Amplifier operation • 1 year warranty • 12 VDC or 117 VAC and 6 VDC or 117 VAC operation • Size: 11¼"L x 9½"W x 4¾"H • Weight: 10 lbs.

BR-20 Business 2 Way Radio complete with mike, 2 crystals and 2 power cables $229.50

100 and 1 uses in every type of industry and business

- Delivery services
- Garage
- Motor Carrier
- Construction
- Road building
- Farm
- Doctor
- Security guards

SONAR RADIO CORPORATION
73 Wortman Ave., Brooklyn 7, N. Y.

Please send me complete information on Business 2 Way Radio BR-20 Dept. 255

Name .....
Address .....
City ..... Zone ..... State .....

Ronnie Beltz, 7Q1051. The CBBA meets first and third Wednesdays at Orla Vista's Chamber of Commerce building.

The Indian River CB Club has resumed meeting activities. Mike Woodard, 7Q1027, is president of this club which serves Ft. Pierce and Vero Beach areas. They monitor 11.

We're looking forward to seeing first issue of a CB newspaper for the central Florida area. Editors are Jim Smith, KDI0143 and Jim Palmer, KDH2832.

As we go to press, a meeting is planned at Cocoa Beach for delegates from Florida clubs to organize the Florida Alliance. Your CCM will report on this meeting, and the contacts he made with CB clubs during his vacation, in our next column.

EIGHTH DISTRICT—KEA/B

We'd like to pass along this chuckle from L. D. Chaney's article in 'The Squawk Sheet'. Seems Mr. Chaney, KEA1000, received a letter from the Sheriff's office in Jackson stating that when they apprehended a suspect after an armed robbery this prisoner complained that everywhere he went he saw a car with a long whip, and he was sure at least 5,000 policemen were after him! These were, of course, CB'ers who aided in the search by circling the area. Sheriff Gilfoy expressed his gratitude for having these CB'ers at his side when needed and he commended the men who were out that night.

TENTH DISTRICT—KEG

The Heart O'Texas CB Club of Waco stimulated so much interest in the S.O.S. (Sabin Oral Sunday) that other civic clubs are taking an active interest and the city fathers have voted the CB'ers a sincere thank you. This sort of activity is to be commended —our hat's off to the Waco club. A picnic and fish fry was enjoyed by club members high atop CB Hill in the Lake Whitney area.

From the Lubbock, Texas 'CB News', edited by Leon Givens, KEG0038, we learn that these club members were active participants in the go-cart races held in that city. Whether there were winners among the CB'ers was not indicated.

The first annual Cowtown Jamboree in Ft. Worth was a tremendous success. Club officers are to be commended for a wellrun affair. KEG5021, Olin Paschall of Mesquite, Texas, won the Hallmark–512 presented by Hayes TV & Radio Service of Mt. Pleasant and Hallmark Co. of Dallas.

As we go to press, reservations are in from 7 states for the big jamboree at Marshall, Texas.

On January 8, 1963, CB'ers of Eastland County, Texas organized the Ten–Ten CB Club. Since that time, this club, whose motto is "Serice on Standby", has assisted local authorities in armed robbery search, pasture fire, livestock parade, and assisted in a polio drive. Roy Smith, KEH2030, is president; Carl Boustead, KEH0817, vice president; and Darrell Basham, KEG4367, secretary–treasurer.

Gene Nowlin, KEH0347, invites CB'ers in the Jefferson, Texas area to visit the Marion County Radio Club.

Mobile units and skin divers from the Sooner CB Club participated in a search for a small boy missing overnight in Oklahoma City.

ELEVENTH DISTRICT—KEJ/K

The Arizona Citizens Radio Assn. entertained members and guests with a buffet dinner, dancing, and contests recently in Phoenix. The twist contest was won by Bill Frazier, 11W8470, and his lovely partner. Waltz winners were club president Doc Watson, 11Q1125, and his wife Lorry. Honest Abe Walker, 11Q3000, won the door prize. Highlight of the evening was exhibition of the hula by Al Butler, 11W9453; Rus Hughs, KEJ1129; and Doc Watson. It was a close race, won by Al Butler, no doubt due to his having more experience.

'QRM' reports the 10-99 Club of Orange County, Calif. has joined the Salvation Army's Radio Disaster Communications Net. Both groups will benefit from this affiliation, the SADRCN will have licensed, experienced mobile units to call on in any emergency; while the 10-99 will have access to the SADRCN's radio shack at 406 E. 4th in Santa Ana.

TWELFTH DISTRICT—KFC-D

Kearney Park was site of first annual jamboree for the CB Radio Club of Fresno, Calif. This club

is very active in community service and has joined Civil Defense. James Rachal, 12W3826, serves as president; Armando Guglielmino, 12Q3253, vice president; Jim Cates, 12Q1121, secretary; and Robert McDonald, 12Q0500, treasurer. Club trustees are: Russ Bailey, KFC0582; Joe Snow, KFC0881; Warren Sellers, KFC3223. Ed Peters, 12Q1290, is Sergeant-at-Arms.

The Cloud 5 Radio Club of Sunnyvale held a car rally that drew 255—almost a jamboree! Ed Porter was rally winner. Second place went to George and Kate Avery, KFC3839; J. W. Call, 12Q1604, won the booby prize. This club looks like it's going places, watch it! The monitoring channel in Sunnyvale is now Natch 9.

Announcing the 11 Meter Radio Club of San Francisco, Inc. Club address is Box 4182. Don Baker, KFC4000, calls the meetings to order on 1st and 3rd Fridays at Patrick Henry School, 19th & Vermont. Dottie Garibaldi, KFC1615, edits the club paper. Bill Brewer, KFC3612; Ron DelCampo, KFC-3141; Frank Garibaldi, KFC1615; Mike Gallardo, KFC0762 and Neil Horton, 12Q2184, serve on the board of directors. The activities committee, consisting of Bob Alvarado, KFC1688, and Bill Anderson, 12Q2774, was responsible for the successful jamboree at the Adobe Creek Country Club in Los Altos. Bob Horton, 12Q2184, serves as vice president and Erma Medina, 12Q3027, as secretary. Believe it or not—club treasurer is Rich Tinibel, 12W2403!

The Redwood Citizen Banders of Eureka held a jamboree and bar-b-q in June; more on this club in a future column.

Same time, new place—Mission City CB Club of Santa Clara now meets at 1410 El Camino Real; still 3rd Mondays at 8:00 pm.

Carrol Deaton, KFG3960, won the Part 15 transmitter hunt conducted by the South County Rebels of Fremont, Calif.

The new Voluntary Emergency Communications group of San Jose's Santa Clara County Citizens Radio League had its first tryout when they helped the Fire Dept. on their annual rodeo and assisted a local bicycle rally. Walkie talkies and mobile rigs were used on these events and worked out very well. The rigs were volunteered by Dave Dougherty, KFC0612; Ed Hoxsie, KFC0289; Joe Giacomo, KFC-1251; Frank Volz, KFC2348 Harry Nelson, 12Q3308; Bill Nelson, KFC4211; Denny Brisbin, KFC4205; Cliff Price, KFC1880; and Dick Southern, 12Q3113. The club's thanks to Joe Pinkston of the San Jose Police Dept. and to Joe Paradiso and Bill Henry of the Fire Dept. for their help in getting the club to be allowed to supply communications for these events.

Don't forget the jamboree in Sparks, Nevada, sponsored by the Silver State CB Club, tentatively scheduled for August 10 & 11.

CB clubs! Remember, the best way to publicize your club is to send monthly reports to your CCM so that news of your club can appear for the rest of the country to read. Let's see those monthly reports in my mail box. 73's Dick.

FOURTEENTH DISTRICT—KFI-J

Guest speaker at the Puget Sound Mobile Marine CB Club was Leo G. Bellarts, head Radio Communications officer of the Snohomish County CD office.

Ernie Tolman, KFI0104, is president of CB Minutemen of Washington, and editor of their paper, 'Minutemen Flash.'

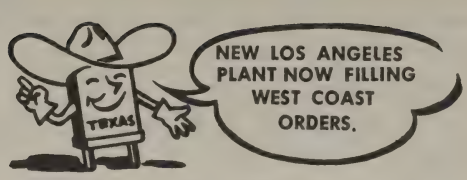
In Everett, Wash., the Evergreen Club now boasts its own printing machine.

Jim Whaley is continuing as editor of the Apple Capital 5 Watt's paper. Recreational activities for this club's recent jamboree were planned by Jim Thomas and his committee.

More than 200 CB'ers from at least 15 different towns in Washington attended the pot luck picnic sponsored by the Apple Capitol 5 Watt Assn. President Ed Fechner expressed his thanks to hard working members of other clubs, as well as his own, who helped make the picnic such a success.

Members of the Washington State CB Assn. have special I.D. stickers to put on their sun visors while gathering news for their program on radio station KVI, Seattle. Al Danner is newly elected president of this group.

Tony L. Fechner (son of our CCM) visited one of the Greenville, Mississippi CB clubs when he was there for Air Force training.



Citizen Band Class "D" Crystals

CITIZEN BAND CLASS "D" CRYSTALS 3rd overtone — .005% tolerance — to meet all FCC requirements. Hermetically sealed HC6/U holders. ½" pin spacing. .050 pins. (Add 15c per crystal for .093 pins). **$2.95 EACH**

All 23 megacycle frequencies in stock: 26.965, 26.975, 26.985, 27.005, 27.015, 27.025, 27.035, 27.055, 27.065, 27.075, 27.085, 27.105, 27.115, 27.125, 27.135, 27.155, 27.165, 27.175, 27.185, 27.205, 27.215, 27.255.
Matched crystal sets for ALL CB units (Specify equipment make and model numbers) ..... $5.90 per set

RADIO CONTROL CRYSTALS
in HC6/U HOLDERS—SIX FREQUENCIES
In stock for immediate delivery (frequencies listed in megacycles); tolerance .005%. ½" pin spacing. .050 pin diameter. (.093 pins available, add 15c per crystal.) Specify frequency desired.
26.995, 27.045, 27.095, 27.145, 27.195, 27.255. ..... **$2.95 EACH**
(add 5¢ per crystal for postage-handling)

TWO PLANTS TO SERVE YOU
RUSH YOUR ORDER NOW TO CLOSEST PLANT
IF YOUR PARTS DEALER DOESN'T STOCK Texas Crystals, order direct and send us his name.
RUSH YOUR ORDER NOW TO

TEXAS CRYSTALS
Div. of Whitehall Electronics Corp. Dept. 7C
1000 Crystal Drive, Fort Myers, Florida Phone WE 6-2109
4117 W. Jefferson Blvd., Los Angles, Calif., Phone 731-2258

FOR SHIPMENT VIA FIRST CLASS MAIL AT NO EXTRA COST ATTACH THIS ADVT. TO YOUR ORDER!

GIANT CB SALE

☐ **COMMAND SUPER III** — 3 Element Beam mounts vertically or horizontally. (reg. $30.00) ..... Sale Price **$11.99**
☐ **CB RADIO MOBILE HANDBOOK,** Horizons Publications, Inc. (A $2.95 Value) ..... Only **.99**
☐ **GROUND PLANE ANTENNA SALE!** (Discontinued Model) Solid Aluminum Radials. Coaxial fittings accepts PL-259. All Sales Final. (6 or more **$5.00** ea.) Sale ..... ea. **5.99**

SALE ON ULTRA-LO-LOSS FOAM COAXIAL CABLE
☐ **RG58U** ..... 50 Ft. — $2.49 ..... 100 Ft. — **$3.99**
☐ **RG8U** ..... 50 Ft. — $4.95 ..... 100 Ft. — **$8.99**

☐ **6CW4 Tubes** ..... ea. **1.69**
☐ **Low-Pass Filter for CB** ..... ea. **1.99**
☐ **GNS Tunable Generator Noise Suppressor** ..... ea. **1.99** (6 or more) ea. **1.49** (12 or more) ea. **1.19**
☐ **Famous SN-3 Command** 15 piece kit. Includes GNS tunable generator filter, Feed-thru — spk. plug and dist. suppressors. etc. Reg. **$10.00** ..... Sale **4.99**
☐ **6.3V-5A.** Fil. Transformer ..... ea. **1.49**
☐ **12.6V-5A.** Fil. Transformer ..... ea. **1.49**

Check items wanted. Return ad or order with check or money order. Include postage, excess refunded. 50c service charge on orders under $5.00. Beams and 102" whips shipped Railway Express. 50% deposit on C.O.D.'s.
☐ **CB DEALERS:** Write for Quantity Prices!

GROVE ELECTRONIC SUPPLY COMPANY
4111 West Belmont Avenue
Chicago 41, Illinois
☐ Rush Items checked
☐ SEND FREE CATALOG OF GIANT CB VALUES
Name .....
(please print)
Address .....
City ..... Zone ..... State .....

EIGHTEENTH DISTRICT—KHA/D

Since the inception of their REACT program, the Cedar Rapids Citizens Radio Club has moved into a very efficient group of radio operators. The "buddy" system has been instituted in calling members by phone and by radio contact. Carl Leitner, 18B2480, will secure white safety helmets for the REACT members. The CRCRC furnished mobile communications for the Eastern Iowa Band Festival.

A full summer schedule has kept the Tri County CB'ers busy planning first one event and then another. The Patrol Group of this club in northwestern Illinois assisted the Oyre Air Show at Rock Falls by policing the grounds of the Whiteside Airport and controlling traffic. The Patrol Group was under the supervision of Vic White. The club's annual picnic was held at the Erie Boat Club Park.

President Bob Neubert, 18Q0904, laid aside his gavel and cooked up a big pot of stew for all of the Waukesha County CB'ers. Pictures taken at a club dinner meeting appeared in their paper 'Heterodyne Herald'. Incidentally, this paper has superb quality candid pictures that add a lot to the members' enjoyment of the publication. The Emergency Unit of the Waukesha County CB Club held a practice alert at the rural home of Chuck and Marily Case, 18W6313 and KHA1540. The emergency was to obtain ice for an ice cream freezer. The practice alert almost turned into a real one when a neighbor had a brush fire start in his yard. It was quickly extinguished and the job (?) of making ice cream continued. Say, this Wisconsin club sounds like a real fun group—wonder if they have honorary memberships?

NINETEENTH DISTRICT—KHG-J

The Southwestern Ohio CB Radio Assn. has undertaken a most ambitious project—their first nationwide citizens band radio jamboree. They have leased the Lebanon, Ohio fairgrounds for Sunday, August 25.

Les Hunter, 19B0482, from the Vulture Valley CB'ers of Roscommon, Mich., writes the club will play host to the visiting CB'ers who are members of the National Guard and stationed at Grayling for their summer encampment. The VVCBC's officers are Jim Carr, KHG5100, president; Janie Lockwood, KHG2196, recording secretary; Jerry McCutcheon, 19Q0105, treasurer. This club monitors 11 in an area from West Branch to Gaylord and from Grayling to Mio.

The Macomb CB'ers Club of Mt. Clemens, Mich. supplied the Detroit News Belle Isle Boat Races with vital CB communications. Two CB marine units were on the Detroit River, several on the island, in the pits on the shoreline, at the registration tent, at the judges' stand, and in the Coast Guard Communication Center. The club worked side by side in radioing accidents to the Coast Guard; in rescuing several racing boats involved in accidents and sinking in the river. The MCBC was highly commended by the 'Detroit News', the boat club, the Coast Guard, and the 'Michigan Sportsman Magazine' for their "excellent communications handling of the all day racing program, and offering emergency assistance whenever needed."

Congratulations to Editor Dave Hudson on the appearance of the first edition of **'News Letter'** published for the Kanawha Valley Communications Club of West Virginia.

A new name was chosen for the Hartford, Michigan club formerly known as the "5 Watters". Since the members are from three counties, they have chosen the name Tri-County CB'ers. This group meets first Fridays. For further information, contact 19Q4138 in Coloma.

TWENTIETH DISTRICT—KIC-D

Charles Cortright, 20Q5384, of Chemung, N.Y. reports the Sullivan Trail CB Club met to view a film on Civil Defense. Ray Murray, 20Q3282, who is District Fire Warden for N.Y. State, advised fires in that area should be reported to specified CB'ers.

Lloyd L. Bayne, 20Q4379, of Lockport, N.Y. announces installation of these officers for the Citi-Banders Club: president, Robert Korff, 20W2364; 1st and 2nd vice presidents, David Korff, 20Q3093 and Charles Worden, KIC2179; treasurer, Donna Miner, 20Q1634; recording secretary, Carolyn Kropf, 20W6390; financial secretary, Rowland Cutter, KIC2213. This club monitors 12 and stands by to render assistance to any CB'er in the area.

Best wishes and luck from the CB Rangers to Joe Perry, well known for his work with the blind in the Butler, Pa. area. Before moving to Alsoona, he atttended a Rangers' meeting. Joe has applied for a Class D license.

NEW LOW PRICE!

Echo 880

Terrific value in a powerful, feature-packed transceiver! **12 channels** xtal controlled + **23** tuneable. 115vac/12-vdc/6vdc operation. Includes crystal spotting, external xtal socket, Turner 355C mike. **Echo 880** has 9 tubes, 4 diodes — for 13 tube functions. 6CX8 in the final. Compact — just 5 x 7 x 13", excellent for base or mobile. **Regularly $139.95.** NOW JUST **$109.00**

Extra Crystals just $1.95 ea.

ECHO COMMUNICATIONS INC.

Box 223 — Cedarburg, Wisconsin

☐ $109 enclosed. Ship Echo 880 at once!

☐ Please send me FREE INFORMATION on the Echo 880.

Name .....

Address .....

City & State .....

CB CALL SIGNS KHG999O

Display your CB Call-Sign proudly. Add the professional look to your station. Neat 2 inch die cut letters, lacquer covered to prevent fingerprints. Perfect for base or mobile. **Satin finish black plastic base. Price $1.50 postpaid.**

NEW PRODUCTS—Dept. CB—Box 481
GRAND HAVEN, MICHIGAN

STOP MOBILE NOISE

The ultimate in noise suppression for generator, regulator; ignition coil. Stops noise at the source.

Ultra-compact, pre-tuned (no tuning required).

Reg. Std. Filter (R/S) 30 A	$ 2.85
Reg. Heavy Duty Filter (R/HD) 50 A	$ 3.25
Voltage Reg. Ign. Coil Filter (VR/C)	$ 2.25
Kit R/S (Contains 2 R/S and 2 VR/C)	$ 9.95
Kit R/HD (Contains 2 R/HD and 2 VR/C)	$10.45

Ben N. Bartlett Co.
1815 W. 85th St. — Los Angles 47, Calif.

CLASSIFIED

Rates for classifieds are 10c per word for advertising which, in our opinion, is obviously of a non-commercial nature. A charge of 25c per word is made to all commercial advertisers or business organizations. We do not bill for advertising in CLASSIFIEDS, nor can we acknowledge receipt of copy sent in. Full remittance MUST accompany all orders. NOTE: The products and services advertised in this section are not guaranteed by the publisher of CB HORIZONS. Closing date for the February issue is December 23rd, in Oklahoma City.

AAA-1 Clipper-Filter, triples talk power. Fits all transceivers, kit $10.99; $15.99 wired. Heathkit owners, double reception; SK-4 RF Pre-selector mounts inside GW-12; SK-3 inconspicuously attaches outside GW-10 or GW-11; either kit, $8.99; wired $11.99. Revolutionary Hy-Gain rooftop 29 inch Omni-Topper, $11.97. DP-2 Coupler-Duplexer kit, $4.99 or $4.00 with any other purchase! New! Solid state NJ-7 NOISEJECTOR yanks noise out by the roots, just wire it into any transceiver, $4.49. All postpaid! Free kit, antenna list. HOLSTROM ASSOCIATES, Box 8640-B, Sacramento 22, California.

ATTENTION NEW JERSEY CB'ERS — We are headquarters for all CB Call-Books, CB Horizons, CB reference manuals — and the very finest in CB radio equipment. Don't buy until you check our deal. Martin A. Dibella Sales, 107 Reno Street, Newfield, New Jersey.

NEW RCA TRANSCEIVERS — 5 watt crystal controlled. In original cartons. 6/110 and 12/110 volts. Both for $60.00 plus freight. A. Saxer, 11701 Kensington, Los Alamitos, Calif.

GENERAL MC-5, factory installed Elenco Power Gainer, mike, 23 transmit and 5 receive crystals 110v and 12v power cords. All in perfect condition, $225.00. Hallicrafters S-108 receiver, continuous coverage .540 mc to 32 megacycles. $95.00. Pete Wright, RR 4, Wabash, Indiana.

FREE CB SHACK 'EXTRAS' LIST — Beautyshack, Box 638, Weimar, Texas.

WANTED!! Your CB card — Need wallpaper badly — will exchange! KBA8553, Bill Jones, 127 Grove Street, Putnam, Connecticut.

CB-WPE-QSL's — New designs. Free catalogue. Longbrook, Box 393-B, Quakertown, New Jersey.

YOUR NAME & CALL — on raised letters, self sticking, plastic tape. Horizontal or vertical. $.25 per set, $1.00 minimum. ALLEN, 430 E. Tilman, Lake Wales, Florida.

FOR SALE — Two Gonset G-11 CB transceivers, single channel push to talk operation. Accessories include Cesco Transicheck, Noistop ignition noise eliminator, dual purpose antenna for both standard AM radio and CB radio with coupling unit included. Used approximately 6 months. Excellent condition. $100.00. Barry Meador, Anthony, Kansas.

CB QSL CARDS — New, kute, klever, komical designs. Reasonable prices. Brilliant colors including beautiful silver and gold. Samples free. Hellwig, Box 425, Lake Wales, Florida.

QSL CARDS — 100 for $3.00. Samples $.25. McCartney's, Freedom, Indiana.

CB WPE QSL CARDS. Samples Free. Radio Press, Box 24A, Pittstown, N.J.

99 COLORED EYEBALL STICKERS — 50c Lick and Stick Eyeball, P.O. Box 10125, Louisville, Kentucky.

'NOW' A 23 CHANNEL POSITION SWITCH to fit 50 or 100 Model International Executives. Get complete enjoyment with this new 23 channel unit. Can be installed in five minutes. $19.95 postpaid. See your dealer or order direct from B & S Electronics, P. O. Box 110, Redwood City, California. Dealer inquiries invited. Money back if not satisfied.

QSL CARDS — Many sharp, cartoon designs . . . send for free brochure. F. B. Mathews Printing & Advertising, 1616 Rural Street, Rockford, Illinois.

QSL's — Special Kromekote, Blue Eagle background, gold embossed confirming data. 25 for $2.00 postpaid. Samples 10 cents. ANDY'S, 12 Bridge, Amsterdam, N.Y.

CB-QSL CARDS . . . highest quality . . . BROWNIE, W3CJI/3W1974, 3110C Lehigh-Allentown, Pa. 24-page cut catalogue with samples, 25 cents.

FREE SAMPLES & CATALOGUE — CB QSL CARDS $2.50 per 100 in 3 colors. GARTH PRINTING COMPANY, Box 51, Jutland, N.J.

ANTENNA SWITCH — Operates one CB on two antennas or two CBs on one antenna. Attractive stainless steel. Takes PL-259 plugs. Net $7.95. ROKO PRODUCTS, Box 3766, Baltimore 17, Maryland.

CBL! WE'VE PRINTED MILLIONS! Outstandingly different for quarter century. World famous Rainbo effects! Samples 25 cents (deductible) C. Fritz, Box 1684, Scottsdale, Arizona.

CBL's 200 printed in 3 colors, lustre coat stock drawn by our own artist. Twenty designs (10 of each) $6.90. Five day service. Satisfaction guaranteed. Constantine Press, KCF0005, Bladensburg, Maryland.

CITIZENS BAND QSL CARDS — 100 two-color glossy, $3.00 postpaid, satisfaction guaranteed. Samples 10 cents. RUSPRINT, Box 7507, Kansas City 16, Missouri.

CB QSL CARDS — Quality work, fair prices prompt service. Samples 10 cents (refundable). Hutchins Brothers, Thorndike, Maine.

QSL CARDS largest selections — lowest prices, samples and catalogue 25 cents. Refund or 25 extra cards with your first order. Debbler Printing, 1309-H North 38th Street, Milwaukee, Wisconsin.

MODULATION BOOSTER — It's NEW! It's terrific. As much as DOUBLES your transmit and receive range with no violation of FCC power regulations. Compact, easy to install, with instructions. New $14.95. Dealers write. ROKO PRODUCTS, Box 3766, Baltimore 17, Maryland.

CB QSL'S — The best for less, custom artwork or stock designs. Fast service. Special 100 3-color glossy cards, $3.20. Samples and FREE 10 Code card, 25 cents. Refunded. Dick Stauffer, 19QA0625, 1996 N. M-18, Gladwin, Michigan.

CB QSL CARDS — Samples 10 cents. Malgo Press, Box 375, Toledo 1, Ohio.

CB QSL CARDS — Economically priced two and three color cards. Free Samples. Paul's Little Print Shop, 7701 Tisdale, Austin, Texas.

QSL'S — Samples 25 cents (refundable). Quotes your designs on request. Send stamped, addressed envelope. Wildcat Press, 6707 Beck Avenue, North Hollywood, California.

CB-QSL CARDS — 45 Designs, FREE brochure. Woody, 2611 Shenandoah, St. Louis 4, Missouri.

WONDERSHAFT

"Communiqué Extraordinaire"

The **WONDERSHAFT** mobile whip is, of course, fiberglass (—all Columbia Products antennas are).

The Whip — STYLE 10 series — provides full quarter wave efficiency in antenna lengths approximately 10% shorter than its metal counterpart. The exclusive Columbia Products fiberglass construction loads the conductor dielectrically and reduces the velocity of electromagnetic propagation. This gives a physical shortening effect similar to that of a coaxial transmission line.

Fiberglass gives **WONDERSHAFTS**, other advantages, too: insulation to reduce operating hazards under live wires . . . a surface that won't rust or corrode . . . light weight . . . high impact and flexural strength. Lengths for frequencies of 25-54 mc. including Citizens Band: STYLE 10-1, 54"-60"; STYLE 10-2, 61"-102"; CB STYLE 10-3, 96".

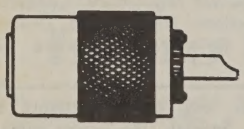
COLUMBIA PRODUCTS COMPANY

SUBSIDIARY OF SHAKESPEARE CO., COLUMBIA, SOUTH CAROLINA

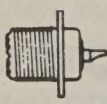
The Most Complete Line of Citizens Band Cables

RG59U, RG58U & RG8UF New Foam Cable

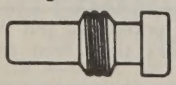
UHF SERIES CONNECTORS, MIL SPEC



PL259



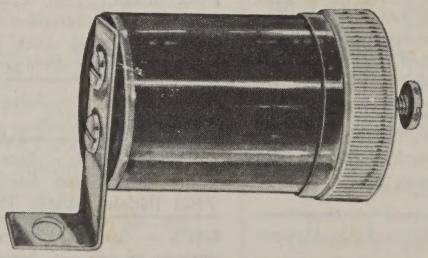
SO239

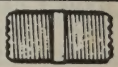


UG175 UG176

6M & 11M Generator Filters

Cable Assemblies





PL258

M358

M359

Write for Catalog and Price Information

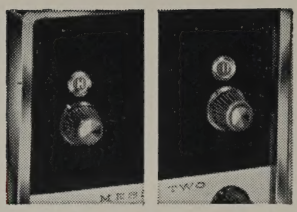
DEPT. H.Z.

REGO INSULATED WIRE CO.

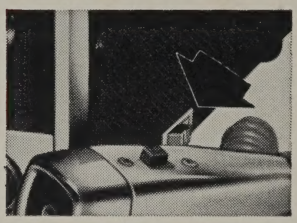
830 MONROE ST., HOBOKEN, N.J. — Phone OL 6-2020

Now! With Tunable Receiver and 10-Channel Crystal Control!

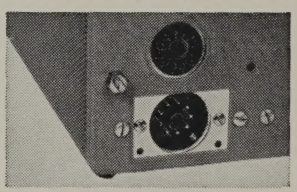
MESSENGER TWO



AT LEFT—Illuminated indicator and selector knob for crystal control.
AT RIGHT—Illuminated indicator and knob for tunable channel selection.



SLIDE SWITCH for selection of either crystal or tunable receiver control.



ACCESSORY SOCKET on rear panel (above power cord receptacle) for instant attachment of "Tone Alert"

High efficiency noise limiter—Excellent sensitivity! High adjacent channel rejection!

Everything you've ever wanted in a CB transceiver!

"TONE ALERT" SELECTIVE CALLING SYSTEM

Mutes speakers until one unit calls another—then automatically your stations receive audio note and indicator light flashes "on", remaining lighted until call is answered. Not a kit, ready to go! Plugs into "Messenger Two", fast hook-up to other transceivers!

Sharp selectivity guards against annoying random triggering. Wide range of tones permits 37 different systems to operate on same channel without overlap. Only 1½" x 4" x 7¾"—wired and tested.

Cat. No. 250-810
115 VAC and 6 VDC
Cat. No. 250-811
115 VAC and 12 VDC
$59.95 NET

Available now—the new version of the popular "Messenger Two"! Pick any one of 10 channels for crystal controlled "transmit" or "receive"—instantly switch to all-channel tunable "receive" with handy slide switch. Channel indicators illuminate for either "crystal" or "tunable" settings—also serve as "off-on" indicators! Highly efficient circuit design makes full use of maximum legal power . . . delivers a penetrating signal that "outperforms 'em all!" Looking for maximum receiver sensitivity? This unit is hot—pulls in signals you wouldn't know were around with less sensitive equipment! New noise limiter circuit in the "Messenger Two" lets you know what QUIET really means in a CB rig! Positive acting "squelch" and automatic volume control circuits—push-to-talk microphone—crystals for 1 channel. 5⅝" x 7" x 11⅜", installs anywhere.

Cat. No. 242-162 . . . 115 VAC and 6 VDC . . . **$169.95 NET**
Cat. No. 242-163 . . . 115 VAC and 12 VDC . . .

4-color BROCHURE.
Write for your free copy today!

E. F. JOHNSON COMPANY
2401 10th AVE. S.W. • WASECA, MINNESOTA

MANUFACTURERS OF THE WORLD'S MOST WIDELY USED PERSONAL COMMUNICATIONS TRANSMITTERS

TWENTY-THREE CHANNEL
TRAM
MOBILE TRANSCEIVER

"FINGER-TIP CONTROL OF THE ENTIRE CITIZEN'S BAND"

The TR-70C is the mobile version of the renowned TRAM 23. Never before have so many useful features been combined in a CB unit.

A unique audio-visual spotting system affords safe, sure, eyes-on-the-road operation. When both the receiver and transmitter are on the same channel and the spot switch is "on", an audible tone is produced in the loudspeaker. At the same time the spot indicator glows and the "s" meter deflects. The spot tone varies in frequency as the receiver is tuned through the channel center frequency. The tone is distinctly higher when the receiver is tuned right-on-the-button. This high pitched tone only occurs on the desired channel, thus allowing fool-proof mobile operation.

Transmitter

70% or better Transmitter efficiency provides 3.5 watts guaranteed minimum RF Output with 100% High Level Modulation.

Receiver

Sensitivity - .1 uv. for 300 milliwatts of audio

Selectivity - 5 kc. @ 6 db. Adjacent channels 60 db. down

Signal to Noise Ratio - .3 uv. for 10 db.

NOW AVAILABLE: TR-27E IMPROVED TRAM 23 CHANNEL BASE STATION

To hear from TRAM by return mail, write for detailed information and specifications.

TRAM ELECTRONICS
P.O. BOX 187, DEPT. A9, WINNISQUAM, N.H. 03289
Tel. 524-0622

BULK RATE
U. S. POSTAGE
PAID
Permit No. 26
Tulsa, Okla.

CB HORIZONS
P. O. BOX 1557
OKLAHOMA CITY, OKLAHOMA